AQM-APC
for InTune™
Administrator's Guide

Version 4.3.1

October 2002

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This publication applies to Version **4** Release **3**.

Please direct all questions about AQM-APC or comments on this document to your product distributor.

Customer Support

You can obtain technical support by using the Support page on the BMC Software Web site or by contacting Customer Support by telephone or e-mail. To expedite your inquiry, please see " Before Contacting BMC Software."Before Contacting BMC Software."

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Before Contacting BMC Software

Before you contact BMC Software, have the following information available so that Customer Support can begin working on your problem immediately:

- product information
  - — product name
  - — product version (release number)
  - — license number and password (trial or permanent)
- operating system and environment information
  - — machine type
  - — operating system type, version, and service pack or other maintenance level such as PUT or PTF
  - — system hardware configuration
  - — serial numbers
  - — related software (database, application, and communication) including type, version, and service pack or maintenance level
- sequence of events leading to the problem
- commands and options that you used
- messages received (and the time and date that you received them)
  - — product error messages
  - — messages from the operating system, such as file system full
  - — messages from related software

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Preface

AQM-APC is an Application Performance Control system for measurement automation and alert handling in the InTune environment. AQM-APC will significantly reduce the manual effort required to implement your Application Performance Management (APM) strategy.

This book is intended for use by product administrators. It describes how to install, customize, and maintain the product.

How This Manual Is Organized

Chapter 1 details how to download the installation files from the website and transfer them to MVS. The subsequent product installation is detailed in a step by step way via illustration of the online installation dialog.

Chapter 2 describes how the Central Component works and the functionality and scheduling of the batch jobs. Additionally, it details how to customize the batch jobs and how to define the parameters online.

Chapter 3 describes how the CICS Feature works and the functionality of the batch jobs. Additionally, it details how to customize the batch jobs and how to define the parameters online.

Chapter 4 describes how the IMS Feature works and the functionality of the batch jobs. Additionally, it details how to customize the batch jobs and how to define the parameters online.

Chapter 5 provides a detailed description of the AQM-APC Server and how to install and customize it.

Chapter 6 illustrates and describes the online panels that can be used to perform maintenance functions for the AQM-APC components.

Chapter 7 provides a few troubleshooting hints.

Appendix A illustrates the batch job JCL used for product installation.

Appendix B is a worksheet you can use in planning your installation parameter definitions.

Appendix C lists and describes all messages that may be issued.

Appendix D illustrates the batch JCL members that might be needed to apply PTF maintenance or to extend product functionality.

The Index allows you to access information quickly.

System Requirements

The following software must be installed on your system:

- MVS/ESA or OS/390
- TSO/ISPF Version 4.x or higher
- REXX
- MVS / OS/390
- Binder Version 1.1 or higher
- InTune Version 2.1 or higher

The AQM-APC Library

In addition to this *AQM-APC Administrator's Guide*, the following books are also available:

- *AQM-APC for InTune User's Guide* explains how to use the online panels to manage InTune measurements and alerts. Additionally, it details the batch jobs may be used to export product information and to measure the jobs of a critical path.
- *AQM-APC for STROBE User's Guide* explains how to use the online panels to manage *STROBE* measurements and alerts. Additionally, it details the batch jobs may be used to export product information and to measure the jobs of a critical path.

Internet

The internet address of the AQM-APC website is: **http://www.trilogexpert.com**. In addition to general information about the product, the website provides:

- All files and documentation necessary for product installation.
- Answers to frequently asked questions (FAQ).
- PTFs that can be downloaded.
- Acrobat PDF files that can be downloaded for all technical documentation.

To access the Customer Support option, please obtain a customer password from your product distributor.

Online Documentation

- AQM-APC books are available in PDF format for online viewing using the Acrobat Reader. These files can be downloaded from the AQM-APC website.
- Online help is available through the ISPF dialog panels.

Contacting Technical Support

If you have an installation question or problem that requires technical support, please contact your product distributor.

What's New with AQM-APC 4.3

Chapter 1. Installation

This chapter explains how to download the installattion files from the website and install AQM-APC.

Before You Begin Installation

The installation files must be downloaded from the A.P.M. AG website and transferred to MVS. The following Table 1 is an overview of the steps that must be followed to generate and access the online dialog. Once these steps are completed, the resulting online dialog leads you through the installation process.

Table 1: Creating the Installation Files on MVS

Step	Action
1	Download the compressed installation file from the user support option of the A.P.M. AG home page, www.trilogexpert.com. **Note**: The installation file is not self-extracting, i.e., it is not an EXE file.
2	Decompress the installation file on your hard disk using WINZIP or another compatible decompression software product.
3	Upload (file transfer) the decompressed file to MVS. This will create a sequential file. Use the following transfer options: BINARY, LRECL=80,RECFM=FB
4	Execute an IEBUPDTE job to create the installation library. See "Creating the Installation Procedure Library" on page 6 for an illustration of the required JCL. Define the installation library and execute this IEBUPDTE job. The installation library requires about 10 cylinders.
5	To access the online dialog, execute the following TSO command: `TSO EX 'install.lib(INSTALL)'` - where *install.lib* is the name of the installation library created by the IEBUPDTE Job.
6	The INSTALLATION Main Menu will be displayed. See "Using the Online Installation Dialog" on page 7.

Creating the Installation Procedure Library

Use an IEBUPDTE job to create the installation library from the sequential file.

JCL for IEBUPDTE - Create Installation Library

```
//JOBCARD…
//*
//STEP0   EXEC PGM=IEBUPDTE,PARM='NEW'
//SYSIN     DD DSN=prefix.INSTFILE,DISP=SHR
//SYSUT2    DD DSN=prefix.INSTLIB,DISP=(NEW,CATLG),
//             SPACE=(CYL,(10,1,120)),
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=8000),
//             UNIT=SYSDA
//SYSPRINT  DD SYSOUT=*
```

Installation Hints

- Please follow the instructions in this chapter carefully. Doing so will ensure an effortless and quick product installation.

- Be prepared in advance with your site specific naming conventions for data sets and libraries. To assist you in planning these, refer to ”Appendix B. Parameter Worksheet” on page 201.

- Each time you are asked to submit a job, be sure the job executes successfully before continuing with the next step. To assist you with job execution confirmation, the online Installation Inquiry dialog is provided, see "Verifying Execution of Installation Jobs" on page 22. The Installation Log will document the installation progress.

Using the Online Installation Dialog

After establishing the installation library and calling the online installation dialog, see Table 1 on page 5, the following INSTALLATION menu will be displayed.

```
INSTPAN0 ===============================================================================
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
------------------   AQM-APC  430                          --------------------
------------------                                         --------------------
------------------   >>>>  I N S T A L L A T I O N  <<<<   --------------------
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
===============================================================================
                     Installation Steps                Status
                     ========================================
      OPTION  ===>
                   1 Create Product Library Data Sets  COMPLETED
                   2 Generate Product Library Members  COMPLETED
                   3 Link Product Programs             COMPLETED
                   4 Create Product Databases          COMPLETED
                   5 Upgrade                           NOT COMPLETE

                   L Show Installation Job Log
                   X END

                     Install Library: PREFIX.APC.INST.V43.LIBRARY

(c)2002, A.P.M. AG. All rights reserved.
```

Panel INSTPAN0: Installation Main Menu

On the Installation main menu, all installation steps are presented in sequence. Before continuing with the next step, the status of the previous step must be COMPLETED. The following options are available on the Installation Main Menu:

---

1 Creates product libraries. Parameter definition panels will be presented on which you must define the library parameters. See "Defining Library Parameters" beginning on page 9 for a detailed description of each panel. After all parameters are defined, the JCL for job INSTJLIB will be displayed and must be submitted. To see an illustration of the generated JCL, refer to "Create Libraries - Job INSTJLIB" on page 185. Be sure to verify the successful completion of this job before proceeding with step 2.

2 Creates library members. This step copies all members from the installation library and generates them in the product libraries. After selecting this step, a TSO message will be displayed for each of the generated members. After all members have been generated, proceed with step 3 on the Installation main menu.

3 Links product programs. A panel will be displayed on which you must define the data set names for your site-specific system load libraries. See "Defining System Load Libraries" on page 17 for a description of this panel. After defining the libraries, the JCL for job INSTJLNK will be generated and displayed. Submit this job to link the product programs. To see an illustration of the generated JCL, refer to "Link Product Programs - Job INSTJLNK" on page 188. Be sure to verify the successful completion of this job.

4 Creates the product databases. This step will generate and display the JCL for jobs INSTJFIL, INSTJCCK, and INSTJINI. To see an illustration of the generated JCL, refer to "Create Product Databases" on page 191. Submit this job and verify its successful completion. To review a descriptive summary of all databases that should be created, see Table 2 on page 20.

5 For the next version of AQM-APC

L At any time during installation, the installation job log can be reviewed. The Installation Job Log panel will be displayed on which the date, time, job name, job description, and status is logged. See "Viewing the Installation Job Log" on page 19.

Defining Library Parameters

The following menu is displayed after you select installation step **1** on the Installation Menu.

```
AQM- --- AQM-APC - Installation - Parameter File -------------------------
Option  ===>

             If AQM-APC is already installed, e.g. a former release,
             all previous definitions for the installation and the
             usage of the products can be copied into the new version.

             1  Use installation defaults
             2  Use an old parameter file
                           DSN: prefix.APC.PARMS









                 CANCEL: CAN
                 SAVE  : ENTER
```

Panel INSTPAN1: Parameter File Menu

On the Parameter File menu, select one of the following parameter definition options:

1 Verify and / or change parameters using the default parameters as a model. Default parameters are supplied by the installation procedure.

2 Verify and / or change parameters using the parameters of an existing parameter file as a model.

After selecting one of these options, the parameters panels will be displayed in sequence. After the parameters of all panels have been supplied, the JCL for job INSTJLIB will be displayed and should be submitted to create the product libraries.

Global Parameters Panel

After you have selected one of the options on the Parameter File menu, the following panel is displayed.

```
INSTPAN2 --- AQM-APC - Installation - Global Parameters ----------------------
COMMAND ===>

General Data Set Prefix: prefix

Data set attributes - PS: UNIT: SYSDA    VOLUME:        SUFFIX:
                    - PO: UNIT: SYSDA    VOLUME:        SUFFIX:
                  - VSAM: UNIT: SYSDA    VOLUME: IDV900 SUFFIX:
                  - TEMP: UNIT: SYSDA    VOLUME:

Blocksize at LRECL=80  :        6160 - 32400, blank if system managed


Please enter the job card:
//ABC1234A JOB (1234,A987,,AB-12),APC,CLASS=A,
//             MSGLEVEL=(2,0),MSGCLASS=4,NOTIFY=&SYSUID
//*
//*


                CANCEL: CAN
                SAVE  : ENTER
```

Panel INSTPAN2: Global Parameters

Use the panel to define all global installation library parameters and the job card to be used by the generated jobs.

Fields

General Data Set Prefix:

Enter a unique prefix to be affixed to the product data set names. The prefix can be no more than 17 characters long.

Data Set Attributes - PS:

Enter the UNIT, VOLUME, and SUFFIX specification to define the generic address for the PS (physical sequential) product data sets.

Data Set Attributes - PO

Enter UNIT, VOLUME, and SUFFIX specification to define the generic address for the PO (partition organized) product data sets.

Data Set Attributes - VSAM:

Enter the UNIT, VOLUME, and SUFFIX specification to define the generic address for the VSAM product data sets (KSDS and RRDS).

Data Set Attributes - TEMP

Enter the UNIT and VOLUME information to be used for intermediate files.

Blocksize at LRECL=80:

If you are not using a storage management system, you can enter any blocksize between 6160 and 32400, provided it is a multiple of 80.

Job Card

Enter a job card to be used by the generated installation jobs and product batch jobs.

DSN Suggestion 1 Panel

After pressing <ENTER> to save the information on the Global Parameters panel, the DSN Suggestion 1 panel will be displayed.

```
INSTPAN3 --- AQM-APC - Installation - DSN Suggestion 1 -------------------------
COMMAND ===>

Please verify the names of the product data sets.

REXX library      (PO) : prefix.APC.EXEC
Panel library     (PO) : prefix.APC.PLIB
Message library   (PO) : prefix.APC.MLIB

CNTL library      (PO) : prefix.APC.CNTL
Load library      (PO) : prefix.APC.LOAD
Auth load library (PO) : prefix.APC.AUTH



Parm ds           (PS) : prefix.APC.PARMS
ADD request ds    (PS) : prefix.APC.ADDRQ
DEL request ds    (PS) : prefix.APC.DELRQ
DELTOM request ds (PS) : prefix.APC.DELRQTOM
Batch log file    (PS) : prefix.APC.LOG

                CANCEL: CAN
                SAVE  : ENTER
```

Panel INSTPAN3: DSN Suggestion 1

Using the prefix that you defined on the Global Parameters panel, this panel provides name suggestions for the data sets to be used by the batch jobs. Review the list of suggested names and make any desired changes.

Fields

REXX library

Name of the product data set containing REXX procedures.

Default: *prefix*.APC.EXEC

Panel library

Name of the product data set containing the panels.

Default: *prefix*.APC.PLIB

Message library

Name of the product data set containing ISPF messages.

Default: *prefix*.APC.MLIB

CNTL library

Name of the product data set containing job control information.

Default: *prefix*.APC.CNTL

Load library

Name of the product data set containing the load modules for the product programs.

Default: *prefix*.APC.LOAD

Auth load library

Name of the product data set containing the authorized load modules for the product programs. This library must be supplied if you plan to use the AQM-APC Server. For details on how to install and use the AQM-APC Server, see "Chapter 5. Using AQM-APC Server" beginning on 151.

Default: *prefix*.APC.AUTH

Parm ds

Name of the parameter data set.

Default: *prefix*.APC.PARMS

ADD request ds

Name of the data set containing either:

- INVOKE commands to be submitted to InTune.

Default: *prefix*.APC.ADDRQ

DEL request ds

Name of the data set containing either:

- CANCEL commands to be submitted to InTune.

Default: *prefix*.APC.DELRQ

DELTOM request ds

Name of the data set containing either:

- CANCEL command requests to be submitted to InTune for tomorrow.

Default: *prefix*.APC.DELRQTOM

Batch log file

Name of the data set containing the log information resulting from the execution of the batch jobs.

Default: *prefix*.APC.LOG

DSN Suggestion 2 Panel

After saving the information of the first DSN suggestion panel, the second DSN Suggestion panel will be displayed:

```
INSTPAN4 --- AQM-APC - Installation  - DSN Suggestion 2 -----------------------
COMMAND ===>

Please verify the names of the product data sets.

JOB ksds         (VSAM) : prefix.APC.KSDSJOB
ALT ksds         (VSAM) : prefix.APC.KSDSALT
LMO ksds BATCH   (VSAM) : prefix.APC.KSDSLMO
LMO ksds CICS    (VSAM) : prefix.APC.KSDSCMO
LMO ksds IMS     (VSAM) : prefix.APC.KSDSIMO
EXC ksds         (VSAM) : prefix.APC.KSDSEXC
PRO ksds         (VSAM) : prefix.APC.KSDSPRO
BPM ksds         (VSAM) : prefix.APC.KSDSBPM
CIC ksds         (VSAM) : prefix.APC.KSDSCIC
CPP rrds         (VSAM) : prefix.APC.RRDSCPP
IMS ksds         (VSAM) : prefix.APC.KSDSIMS
IPP rrds         (VSAM) : prefix.APC.RRDSIPP



                 CANCEL: CAN
                 SAVE  : ENTER
```

Panel INSTPAN4: DSN Suggestion 2

Using the prefix that you defined on the Global DS Parms panel, this panel provides name suggestions for the data sets to be used by the batch jobs. Review the list of suggested names and make any desired changes.

Fields

JOB ksds

Name of the VSAM KSDS file to contain the batch job step statistics.

Default: *prefix*.APC.KSDSJOB

ALT ksds

Name of the VSAM KSDS file to contain the batch alerts generated by AQM-APC.

Default: *prefix*.APC.KSDSALT

LMO ksds BATCH

Name of the VSAM KSDS file to contain the load module information for the Basis Component.

Default: *prefix*.APC.KSDSLMO

LMO ksds CICS

Name of the VSAM KSDS file to contain the load module information for the CICS option.

Default: *prefix*.APC.KSDSCMO

LMO ksds IMS

Name of the VSAM KSDS file to contain the load module information for the IMS option.

Default: *prefix*.APC.KSDSCMO

EXC ksds

Name of the VSAM KSDS file to contain the scope of work definitions.

Default: *prefix*.APC.KSDSEXC

PRO ksds

Name of the VSAM KSDS file to contain the batch measurement information.

Default: *prefix*.APC.KSDSPRO

BPM ksds

Name of the VSAM KSDS file to contain the batch measurement management information.

Default: *prefix*.APC.KSDSBPM

CIC ksds

Name of the VSAM KSDS file to contain the CICS measurement information.

Default: *prefix*.APC.KSDSCIC

CPP rrds

Name of the VSAM RRDS file to contain the original CICS measurement reports created by your measurement tool.

Default: *prefix*.APC.RRDSCPP

IMS ksds

Name of the VSAM KSDS file to contain the IMS/DC measurement information.

Default: *prefix*.APC.KSDSIMS

IPP rrds

Name of the VSAM RRDS file to contain the original IMS/DC measurement reports created by your measurement tool.

Default: *prefix*.APC.RRDSIPP

Define Parameters for Related Products - Sub-Products Panel

After saving the information entered on the DSN Suggestion 2 panel, the Sub-Products panel will be displayed:

```
INSTPE#1 ---- AQM-APC-Installation- Measurementproduct Definitions ------------
COMMAND ===>

Please provide the following parameters to define related products.


  Name of a logdataset used by the measurement product:
         LOG-DS   :  LOG.DATASET

  Name of the loadlibrary of the measurement product:
         LOADLIB :  INTUNE.LOAD

  UNIT and VOLUME definition for the measurement result datasets:
                  : UNIT: SYSDA    VOLUME:




                 CANCEL: CAN
                 SAVE  : ENTER
```

Panel INSTPE#1: Sub-Products

For related products that will be used with AQM-APC, define the product specific parameters described below.

After defining these parameters, press <ENTER> to display job INSTJLIB. Submit this job to create the product libraries. To see an illustration of this JCL, refer to "Create Libraries - Job INSTJLIB" on page 185.

Fields

Versionnumber of the used measurement product

Enter the main version number of InTune

Name of a logdataset used by the measurement product

Enter the name of a log-dataset. You have to allocate this dataset with LRECL=80, RECFM=FB
e.g. enter the name of the APC Log-Dataset.

Name of the loadlibrary of the measurement product

Enter the name of the general purpose unauthorized load library containing the *InTune* load modules.

UNIT and VOLUME definition for the measurement result datasets

Enter the unit name. If not SMS managed, enter the volume name to enable *InTun's* creation of the measurments.

Defining System Load Libraries

The following panel is displayed after you select installation step **3** on the Installation menu.

```
INSTPAN5 --- AQM-APC - Installation  - Link Programs --------------------------
COMMAND ===>


Please provide the data set names for your site-specific system load libraries.

ISPF system load lib    : SYS1.ISP.SISPLOAD


MVS callable services 1.: SYS1.CSSLIB
                      2.:




                 CANCEL: CAN
                 SAVE  : ENTER
```

Panel INSTPAN5: Link Programs

Use this panel to define your site-specific system load libraries. After pressing <ENTER>, the job will be displayed and should be submitted. See "Link Product Programs - Job INSTJLNK" on page 188 for an illustration of the generated job.

Fields

ISPF system load lib

Enter the data set name of your ISPF system load library.

MVS callable services

Enter the data set name of system load library used for MVS callable services.

Upgrading from a Previous Release

If you are upgrading from a previous product release, the following panel is displayed after selecting step **5** on the Installation menu.

```
INSTPAN6 --- AQM-APC - Installation - Upgrading -------------------------------
Command ===>


In case of an upgrade, enter the version number, e.g. 410.

            AQM-APC  upgrading from version: 411



            CANCEL: CAN
            SAVE  : ENTER
```

Panel INSTPAN6: Upgrading

This panel is for the next version of AQM-APC

Viewing the Installation Job Log

To view the status of all installation jobs, select option **L** on the Installation menu to display the following job log.

```
******************************** Top of Data ********************************
**=========================================================================**
**                                                                         **
**        AQM-APC INSTALLATION JOB LOG                                     **
**                                                                         **
**=========================================================================**

DATE       TIME   JOB           DESCRIPTION                DONE
=========================================================================
2002/03/11 13:49  #1 INSTJLIB   CREATE PRODUCT LIBRARIES - SUCCESSFUL
2002/03/11 13:50  #2 INSTJLNK   LINK PRODUCT PROGRAMS    - SUCCESSFUL
2002/03/11 13:51  #3 INSTJFIL   CREATE PRODUCT DATA BASE - SUCCESSFUL
2002/03/11 13:52  #4 INSTJINI   INITIALIZE DATA BASE     - SUCCESSFUL
2002/03/11 13:52  #5 INSTJCCK   CHECK PRODUCT DATA BASE  - SUCCESSFUL
****************************** Bottom of Data ******************************
```

Panel ISRBROBA: Installation Job Log

Use this panel to view the date, time, description and status of the installation jobs.

Creating Product Databases

Step **4** of the Installation menu will generate jobs INSTJFIL, INSTJCCK, and INSTJINI. After successful execution of these jobs, the following files should exist:

Table 2: Product Databases

Name	Description	Organization
prefix.APC.PARMS	Parameter file	PS RECL = 80
prefix.APC.KSDSLMO	Load module information (Batch)	VSAM KSDS
prefix.APC.KSDSCMO	Load module information (CICS)	VSAM KSDS
prefix.APC.KSDSIMO	Load module information (IMS)	VSAM KSDS
prefix.APC.KSDSJOB	Batch job step statistics	VSAM KSDS
prefix.APC.KSDSALT	Alert file	VSAM KSDS
prefix.APC.KSDSEXC	Scope of work definitions	VSAM KSDS
prefix.APC.KSDSBPM	Batch measurement management file	VSAM KSDS
prefix.APC.KSDSPRO	Batch measurement file	VSAM KSDS
prefix.APC.DELRQTOM	Tomorrows delete requests for InTune	PS RECL = 80
prefix.APC.ADDRQ	Add requests for InTune	PS RECL = 80
prefix.APC.LOG	Log file for batch jobs	PS RECL = 80
prefix.APC.CICSRQ	Delete CICS-requests for InTune	PS RECL = 80
prefix.APC.IMSRQ	Delete IMS-requests for InTune	PS RECL = 80
prefix.APC.DELRQ	Delete requests for InTune	PS RECL = 80
prefix.APC.KSDSCIC	CICS measurement information	VSAM KSDS
prefix.APC.RRDSCPP	Original measurement reports of CICS	VSAM RRDS
prefix.APC.KSDSIMS	IMS/DC measurement information	VSAM KSDS
prefix.APC.RRDSIPP	Original measurement reports of	VSAM RRDS

	IMS / DC	

Verifying Execution of Installation Jobs

The Installation Main Menu lists each of the installation steps and indicates whether the step has been completed. The step completion includes installation jobs that have to be submitted and observed in your spooling facility. If for some reason the last job has not completed normally, you will be prompted with the following Installation Inquiry panel.

```
------------ AQM-APC - Installation - Inquiry --------------------------------
COMMAND ===>

A normal termination has not been confirmed for installation job jobname.
One of the following conditions/actions is applicable:

1) You did not submit the last job that was reviewed in edit mode.
   Enter command CAN and repeat the installation step.

2) You submitted the job, but the job has not finished yet.
   Observe the job in your spooling system.  If the job terminates normally,
   press ENTER to continue with the next installation step.


3) The job has terminated abnormally.
   Enter CAN to repeat installation step and resolve the JCL problem.

4) The last job submitted has terminated abnormally however you accept this.
   Be aware that the success of the installation might be adversely affected.
   Enter command ACCEPT to continue with the next installation step.
   Your acceptation will be logged in the Installation Log.
```

Panel INSTPINQ: Installation Inquiry

This panel prompts you to verify the job execution of an installation step.

Using the Panel

One of the following conditions exists for the job name identified by *jobname* on the panel. Using your job spooling system, determine which condition is applicable and perform the corresponding action.

1. The last installation job that was reviewed in edit mode was not submitted. Enter primary command CAN to repeat the installation step and submit the job.

2. The job was submitted, but has not finished yet. Observe the job in your spooling system. If the job terminates normally, press ENTER. The Installation Main Menu will be displayed with a COMPLETED status for the step in progress. You may continue with the next installation step.

3. The job has terminated abnormally. Enter primary command CAN. Find and resolve the problem that caused the abnormal termination and repeat the installation step.

4. The job has terminated abnormally. However, after having reviewed the reason for the abnormal termination, you decide to accept the job execution and force the COMPLETED status. Be aware that the success of the installation might be adversely affected. Enter primary command ACCEPT. The Installation Main Menu will be displayed with a COMPLETED status for the step in progress. You may continue with the next installation step. Your acceptation will be logged in the Installation Log.

Chapter 2. Customizing the Central Component

This chapter provides an overview of the Central Component and describes how to customize the REXX procedures, batch jobs, and parameters to be used.

Overview

AQM-APC scans the load, job, and procedures libraries you define and locates all changed modules. Additionally, SMF job step termination (SMF 30, subtype 4) records are read, statistics calculated, and current consumption values checked for anomalies. The changed modules, job steps exhibiting a significant increase in resource consumption, and specific job steps you identify as 'user alerts' become measurement requests to your measurement tool. The resulting measurement information is then interpreted and filtered by AQM-APC. The measurements are stored for accessibility through the online dialog for up to 18 months.

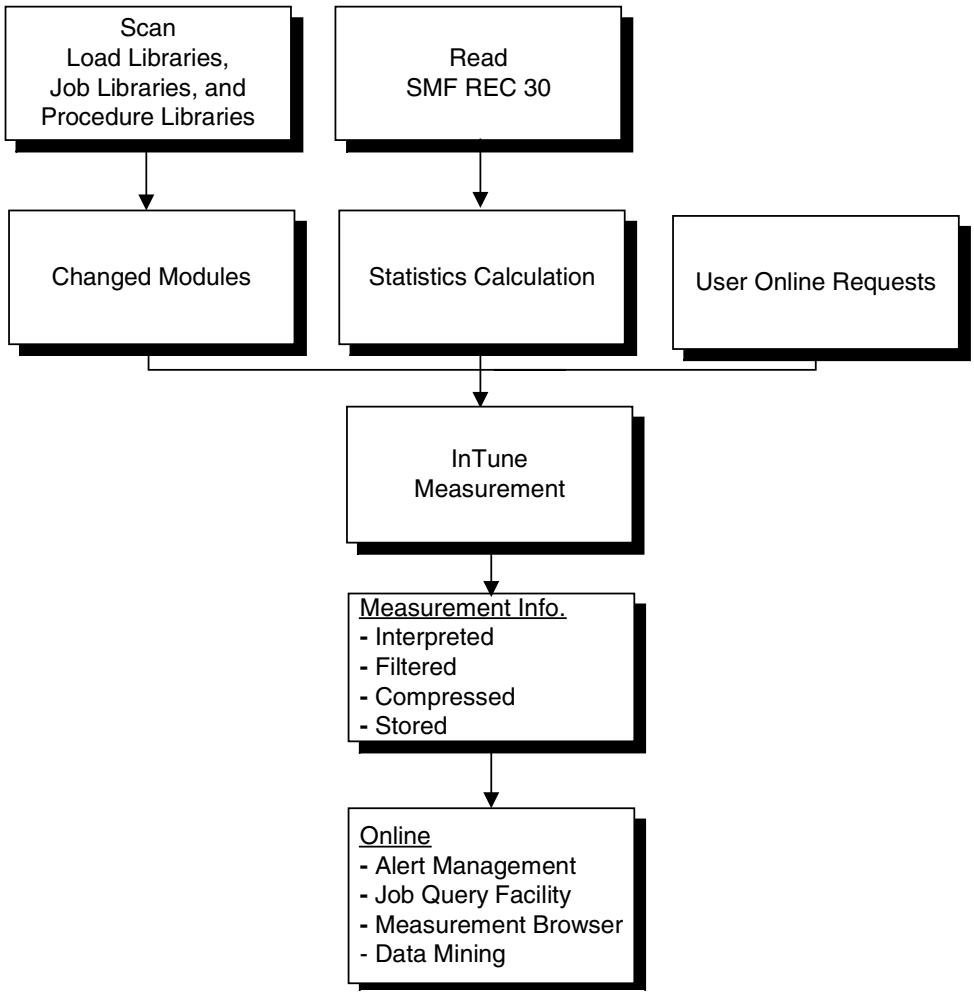


Figure 1: Functional Diagram

Planning Your AQM-APC Approach

For the obvious reason of performance problems resulting from poorly written applications and programs, performance measurement and correction are important. As a tool to assist you in this, the Central Component features can best be utilized by first planning your approach. The types of approach you should consider are:

1. Fire fighting or special task approach using the AQM-APC online job query facility to select job steps belonging to:

   - your top consumer for elapsed time or service units supported by the TOP Scope functionality. The Bulk Alert command guarantees easy handling of top consumers.
   - your critical path
   - a newly installed application.

   You can decide which of these job steps will be alerted by using the online Give Alert or Bulk Alert options. The next time the selected job steps are executed, measurements will be taken.

2. Preventive approach

   Every time a module is changed by a programmer, it is possible that the changes will degrade the performance of the program. For this reason, AQM-APC detects all changed modules and determines which job step will next execute that program. If your programs are most often called dynamically, you must provide information in the form of a cross reference file as described in job APCXJLIB -- DD name APCCHLMO or APCSPMP. You should update the General Parameters for the Central Component only once. Then, on a daily basis, AQM-APC will automatically provide measurement requests for changed modules.

3. Statistical consumption value approach

   AQM-APC uses SMF30 records (subtype 4) to gather consumption values of job steps. Therefore, AQM-APC knows if a job step execution is a runaway. AQM-APC gives an alert automatically and the next time the job step is executed, a measurement request is provided.

   - To provide AQM-APC with a good statistical basis, it is recommended that APCBJSMF run for 10 days without the Give Alert' function (see the 'No. days...' field on the General Parameters panel).
   - To concentrate your focus on important job steps, define the scope of work by: 1) Including / Excluding jobs and programs and 2) varying the TOP Scope amount -- a lower TOP Scope is good for fire fighting and a higher TOP Scope leads into the preventive approach.

Gathering this information for input to AQM-APC will ensure that only relevant measurements are performed and are reported.

Reducing the Scope of Work

The basis for the AQM-APC processing is the scope of work that is defined by the user. By limiting the scope of work, AQM-APC can focus on those job steps that are interesting. The scope of work can be limited by:

- Defining exclusions for InTune.
- Defining inclusions and exclusions for AQM-APC.
- Defining the TOP Scope -- limiting measurements to the set of job steps that consume the most resources.

Defining Inclusions and Exclusions

Not all job steps in your batch production environment are interesting enough to be observed by AQM-APC. Furthermore, some job steps should not be measured at all. For this reason, AQM-APC uses a hierarchical concept to define the workload for AQM-APC and for InTune. This hierarchy has 4 levels (each level reduces the workload and is the basis for the next level):

Table 3: Workload Hierarchy

Level	Description
1	AQM-APC Scope job name definitions: • Generic job name definitions using * as a wildcard. • All job name definitions must be either inclusions or exclusions. Inclusions are recommended when defining job names. For example: PR* INCLUDED means that all job names other than those that begin with PR are implicitly excluded.
2	AQM-APC Scope program name definitions: • Generic program name definitions using * as a wildcard. • All program name definitions must be either inclusions or exclusions. Exclusions are recommended when defining program names. For example: IEF* EXCLUDE IEB* EXCLUDE SORT EXCLUDE IDC* EXCLUDE This means that job steps within jobs defined in level 1 will not be observed if those steps call a program defined in level 2.

3	InTune Scope: Job name definitions • Generic definitions using both * and _ as wildcards. • All definitions are exclusions only. For example: __KV* means that when KV is in the third and fourth positions of a job name, that job name will be excluded from measurements because, for example, this application will soon be replaced by a new application.
4	InTune Scope: Program name definitions • Generic definitions using both * and _ as wildcards. • All definitions are exclusions only. For example: ___X01__ might mean that programs with a value of X01 in the fourth, fifth, and sixth positions of the program name indicate "used one time only programs" that should not be measured.

The levels of the AQM-APC hierarchy are treated as logical AND operations. The AQM-APC Scope defines the job steps for which statistical information should be gathered and calculated. These statistics are available under the JOBS option of the online dialog. For information about using the Job Query Facility, refer to the *AQM-APC User's Guide* that corresponds with your measurement tool.

The InTune Scope decides which jobs and programs should be excluded from measurement. However, job statistics are still available.

In general, exclusions should only be defined when you are very sure that future measurements are not desired, e.g., the job or program is to be replaced soon. As a rule, do not insert an exclusion after closing optimization efforts for a job or program since this would prevent automatic measurement of program changes.

In summary, your scope of work definitions combined with your TOP Scope definitions work together to reduce measurements and alerts to only those that are really important.

Defining the TOP Scope

Within the scope of work defined through inclusions and exclusions of job names and programs, the scope can be further drastically reduced using the TOP Scope facility. This facility identifies the job steps consuming the greatest resources and limits the measurements to this group.

To define the use of the TOP Scope, there is only one parameter. This parameter is called "TOP Scope of important steps" and may contain a value from 0 - 999. A value of 0 indicates that AQM-APC statistical alerts are disabled. In all other cases, the TOP Scope defines how many important job steps should be statistically observed.

The TOP Scope results will be generated at least once a day under job step APCBAALM of job APCXJLIB or optionally after changing the TOP Scope via the online dialog. To figure out the TOP Scope, AQM-APC computes the importance of a job step using the following algorithm:

$$\text{importance} = \log_2(\text{srvu}) + \log_2(\#\text{ of executions per month}) + \log_2(\text{elpsd})$$

Based on the results of this computation, the importance will be computed for each job step of the AQM-APC job file and the top limited number of the most important steps will be flagged. To review the results, simply select the TOP method of the Job Query Facility panel.

☞ **Note**: The importance formula is equivalent to the product of service units, the number of executions, and elapsed time.

The TOP Scope method uses the "imp" formula to select the top resource-consuming job steps up to the limit set in the TOP Scope = nnn parameter. Statistical alerts and measurements will be limited to the members of this group of large consumers.

The TOP Scope can be used to control:

- Initiation and number of statistical alerts generated by AQM-APC.
- Generated alerts for all modified and new modules.
- Handling of user alerts that were initiated via the AQM-APC online dialog.

Alert Management

AQM-APC's alert processing automatically identifies critical situations within a job step that require a measurement. Generally, alerts are created in two ways:

1. The alert is opened automatically when AQM-APC recognizes that current execution consumption values exceed the statistical limits for a particular job step or that a scheduled job step is calling a changed module or a new module.

2. The user explicitly creates a manual alert for a job step using the online Alert Management feature.

The alert management feature provides all the necessary information to handle the alert. A lot of information is provided in the form of state and reason codes that identify the situation. The following table provides a description of these codes:

Table 4: Alert Overview

State Code	Reason Code	Long Description
PEND		AQM-APC will initiate a measurement. A measurement report will be available if the alert state is changed to OPEN.
	ELPS SRVU	Created by job APCBJSMF as a result of statistical calculations.
	MODC	Created by job APCXJLIB as a result of a changed module.
	USER	Created by an AQM-APC online user.
OPEN		AQM-APC has information about an alert, either a measurement report or user text.
	ELPS SRVU MODC USER	The state was changed from PEND to OPEN by job APCYJNAR for one of the following reasons: • A measurement existed for a job step that was in the TOP Scope and had exceeded its statistical limits. • A measurement was stored in any case by user definition. No further alerts will be created except those of changed modules.
	TEXT	Created by an AQM-APC online user to indicate that no measurement was requested; however, user text information was provided.
	CHCK	An AQM-APC user has initiated an alert for checkpoint writing.
REV		An AQM-APC online user selected an alert for review/inspection.
	All	State was changed by an AQM-APC online user by using command R(eview) in the Alert List Panel. No further alerts will be provided.
CUSE		An AQM-APC online user closed the alert.
	All	State was changed by an AQM-APC online user by using command C(lose) in the Alert List Panel.
CTHR		AQM-APC closed the alert automatically.
	ELPS SRVU MODC USER	State was changed by job APCYJNAR because the measured job step abended or a change to the InTune Scope affected a PEND alert.

CIMP		AQM-APC closed the alert automatically.
	ELPS SRVU MODC	State was changed by job APCYJNAR because the consumption values of the measurement did not exceed the statistical based alert values or a TOP Scope change affected a PEND alert.
CMUL		AQM-APC closed the alert and temporarily stopped further alerts automatically.
	ELPS SRVU MODC	State was changed by job APCYJNAR because AQM-APC detected more than 3 contiguous alerts with CTHR or CIMP. No further measurements will be provided by AQM-APC until it detects a module change or an online user uses the D(elete) command in the Alert List Panel.
COVT		An AQM-APC online user closed the alert and took over the statistical data.
	ELPS SRVU	State was changed by an AQM-APC online user by using the overtake command "O" in the Alert List panel. In this case, the runaway values will be the new statistical base for future tests.

How AQM-APC Batch Scope Works

The following figure illustrates how the batch scope reduction works:

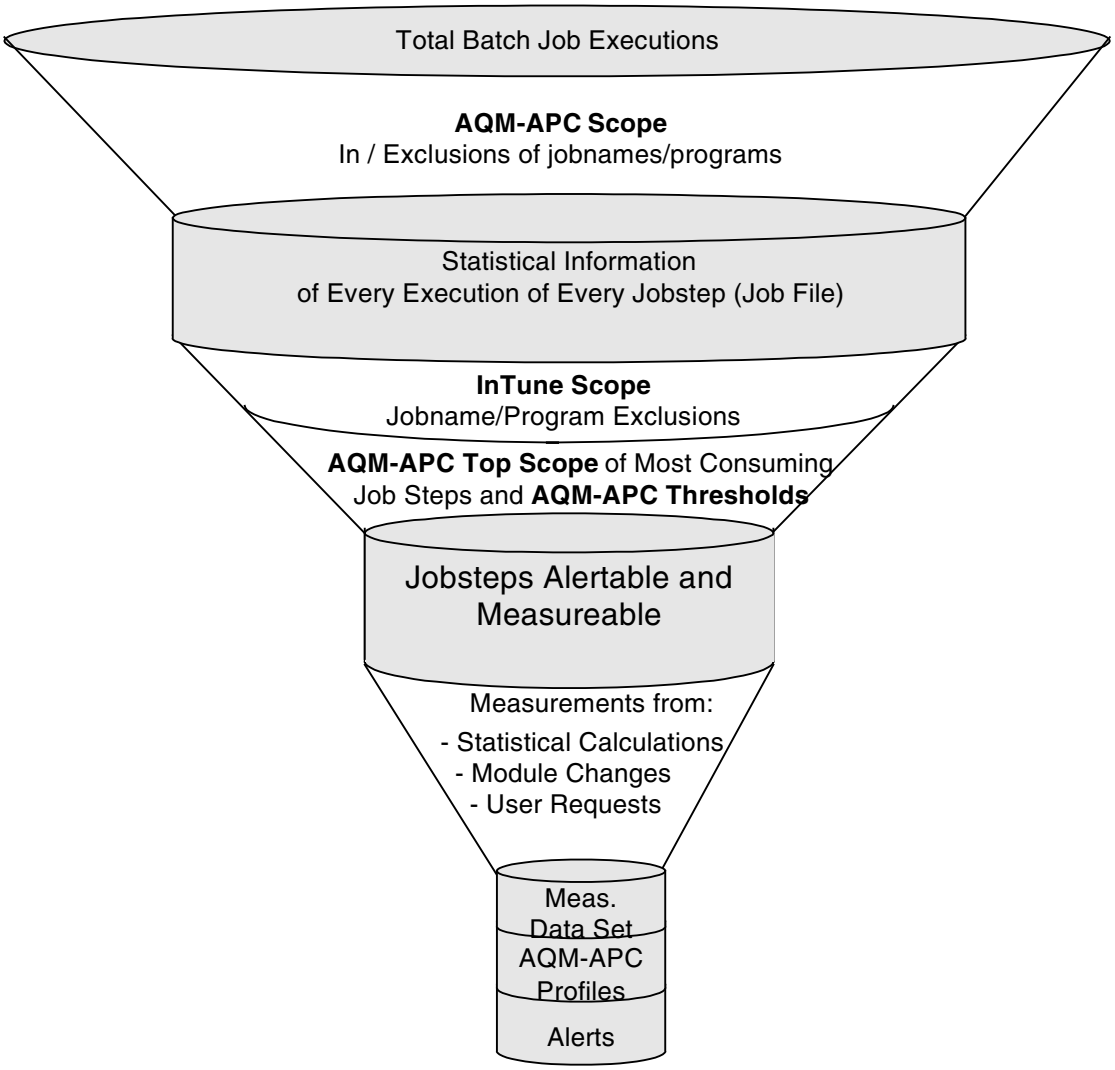


Figure 2: How AQM-APC Batch Scope Works

Getting Started

After completing the previous Functional Overview section, you should have some understanding regarding:

- AQM-APC concepts
- How the Central Component works.
- How to plan your measurement strategy.

This section, "Getting Started," provides you with the general information you need to use this documentation, the batch jobs, and the ISPF panels of the Central Component. Additionally, this section provides you with a step by step overview on using the batch jobs and the online interface, see "10 Steps to Getting Started" on page 34. Detailed descriptions of the Central Component batch jobs begin on page 38.

Using the REXX Procedures and Batch Jobs

The first thing you must do is customize REXX procedures and batch jobs as detailed in the next sections. This consists of:

- Defining site specific variables within REXX procedures.
- Replacing character strings in jobs with your site specific qualifiers (if this was not done during installation).
- Reviewing the scheduling requirements of each job so that each job can be integrated into your scheduling system. It is recommended that all batch jobs be scheduled to run on a daily basis.

Before executing the batch jobs, you should invoke the online dialog and define all general parameters. Failing to do so will cause the batch jobs to end without performing their functions correctly. For details on defining user parameters, see "Defining Parameters" on page 78.

Using the Menus and Panels

To start the online dialog, simply execute REXX procedure APC (the name of this procedure may have been changed during installation). The AQM-APC Main Menu is displayed. If this is the first time you have logged on, the General Parameters panel will be displayed and you must enter your distributor supplied password into the password field. After entering the password, the Main Menu will be displayed. The online services can be called multiple times from one TSO user (using split screen). However, they cannot be called more than once in one logical screen.

In rare instances, the value displayed for a field on a panel may contain all 9's separated by a decimal point, e.g., 999.999. This means the actual value is too large for the display.

With the online dialog, there are two kinds of commands that can be used on the menus and panels*: primary commands* and *line commands*. Primary commands are those that you enter on the COMMAND line. Use primary commands to perform functions that affect the whole menu or panel with which you are working. Line commands are commands that you enter on a particular item in a row within the body of the panel. Line commands allow you to work with a specific item displayed on a list.

Using Generic Notation

Some panels allow you to use generic notation. Generic notation, also called pattern matching, allows you to easily specify more than one name (e.g., job name) by the use of wildcards. Use the underscore '_' as a generic character (or wildcard) to represent **one** character or use the asterisk '*' as generic character to represent **one or more** characters at the **end** of the name.

For example, defining a job name exclusion for ABC* would exclude all jobs beginning with the letters ABC. Entering a query selection for job name A_C_E___ would select all jobs with an A in the first position, a C in the third position, an E in the fifth position and any character in the second, fourth, sixth, seventh, and eighth position.

Integration of Existing Measurement Data Sets

For the purpose of testing your product installation and as a quick start to using the product, you can integrate existing measurement data sets into AQM-APC. Otherwise, for the more extensive steps necessary to use the product effectively, see the next section "10 Steps to Getting Started" on page 34.

Integration of any existing measurement data sets allows you to view or print the reports of these data sets using the online dialog. The data from these reports may be reduced by defining scopes of work.

Display the Central Component online panels and enter all necessary general parameters, see "Defining Parameters" on page 78. After the parameters are defined and saved, submit job APCYJSUB (found in your product CNTL library).

Important parameters:
- Password
- Delete measurement data set
- Print measurements automatically
- Aut. storage of measurements in AQM-APC
- Prefix for measurement data sets
- Scope of work
- TOP Scope

Note: The prefix for measurement data sets, as defined in the parameter panel, must be the same as the prefix of the existing measurement data sets. If not, job APCYJSUB will not recognize the measurement data sets as being controlled by AQM-APC. If necessary, call the "Global Sample DS Processing" panel and change the data set name prefix to the value of the existing data set prefixes.

10 Steps to Getting Started

After reviewing the *AQM-APC User's Guide* that corresponds with your measurement tool, you are ready to begin using AQM-APC. The following table outlines the steps that you should follow for effective use of the Central Component.

Table 5: Getting Started Steps

Step	Description
1	Define general Central Component parameters.
2	Determine the scope of work for AQM-APC and InTune by explicitly defining job and program inclusions/exclusions and TOP Scope.
3	Look for your site specific SMF data sets containing SMF 30 records in dumped format. These data sets should be input to job APCBJSMF and executed for at least one or two weeks.
4	Review the scheduling requirements for job APCBJSMF and integrate this job into your scheduling system.
5	Define all other central component parameters. • Libraries (LOADLIB, JOBLIB, PROCLIB) • Standard programs • Standard procedures • Global sample DS processing (e.g., sample DS name prefix)
6	Look for your site specific scheduler day plan and use the JP parameter in the parameter file.
7	Review the scheduling requirements for the batch jobs and plan how to integrate these jobs into your scheduling system.
8	Review measurement results using the MEASUREMENT option. Note that measurement reports can be retained for up to 18 months.
9	Check for alert situations using the online ALERT option. Review the alert state codes and reason codes and identify situations that require corrective action.
10	Use the job selection query facility to query the AQM-APC database for certain job steps or conditions.

REXX Procedures

This section explains how REXX procedures APC, APCBRXX, and APCDRXX can be customized.

Start Up Procedure APC

In REXX procedure APC, site-specific start up variables can be defined. The following is an illustration and a description of these variables:

```
APCSPACC  = UPD                          /* UPD OR READ     */
APCSPREP  = N                            /* PREPROD N/Y     */
APCSIMG   = '--------'                   /* MVS IMAGE NAME  */
TEMPDSN  = ZUSER".APCX.TEMP"ZSCREEN      /* UNIQUE DSN      */
ADDRESS ISPEXEC "VGET  APCSORTA MEASUREMENT" /*                  */
   IF RC ^= 0 THEN DO                    /* panel attribute */
      APCSORTA  = 'INTENS(HIGH)'         /* for sorted field*/
   END                                   /*                 */
```

Defining Access Rights

Variable APCSPACC defines whether parameter panels have update or read only access. This variable allows the product to be installed for different user groups, update and read only. The installation default is UPD. For read only access, this value can be changed to READ. The values must be input as capital letters.

☞ **Note**: Within your authorization system, e.g., RACF, ACF2, or TSS, all AQM-APC users should be defined with UPDATE access for all data sets belonging to the product databases, even those users who are defined with READ only access.

Defining System Image Name

Variable APCSIMG defines the AQM-APC system image name to be displayed on all panels. This parameter is required and must be 8 characters. It should uniquely identify each environment on which AQM-APC is installed, i.e., test, production, preproduction. For example, if REXX procedure APC is installed on the production system, the value might be PROD123U meaning this product is on a production system.

If you do not want to define a system image name, the value of APCSIMG should be filled with 8 dashes, i.e., `--------` .

Changing Temporary Data Set Name

Variable TEMPDSN is a unique temporary data set name used by the dialog. This name should only be changed if there is an explicit need to do so, e.g., access authority problems.

Highlighting the Sort Order Column of Panels

By default, the column used for the sort order of panels is defined as 'INTENSE(HIGH)'. To change the marking of this column, change variable APCSORTA to any other valid ISPF attribute.

API Procedure APCBRXX

APCBRXX is a procedure that can be invoked by using line command **X** on any Central Component List panel, i.e., panels APCBP001, APCBP002, and APCBP003. Through site-specific customization of this procedure, the user can:

- Pass AQM-APC data to other products, e.g., data dictionaries.
- Call user written procedures, e.g., to browse the production JCL of a specific job step in AQM-APC and locate the programmer name within the job card. The following is an illustration of the delivered procedure:

```
/*  REXX */
X = MSG('OFF')
/* TRACE ?I  */
   ADDRESS ISPEXEC
        "VGET (APCXXTYP) SHARED"
   IF APCXXTYP = 'MEASUREMENT' THEN DO
      "VGET (APCXXJOB APCXXSTP APCXXPST) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCBRXX) PROCEDURE.'
       SAY 'JOB:'APCXXJOB'  STEP:'APCXXSTP'  PROCSTEP:'APCXXPST
   END
   IF APCXXTYP = 'ALERT' THEN DO
      "VGET (APCXXJOB APCXXSTP APCXXPST) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCBRXX) PROCEDURE.'
       SAY 'JOB:'APCXXJOB'  STEP:'APCXXSTP'  PROCSTEP:'APCXXPST
   END
   IF APCXXTYP = 'JOB' THEN DO
      "VGET (APCXXJOB APCXXSTP APCXXPST) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCBRXX) PROCEDURE.'
       SAY 'JOB:'APCXXJOB'  STEP:'APCXXSTP'  PROCSTEP:'APCXXPST
```

The following sample is a REXX procedure that illustrates how to browse the JCL to identify the name and the phone number of the person responsible for a job.

```
"CONTROL ERRORS RETURN"
     "VGET (APCXXJOB APCXXSTP APCXXPST) SHARED"
     "BROWSE DATASET('production.proclib("APCXXJOB")')"
      IF RC = 0  THEN NOP
      ELSE DO
           "SETMSG MSG(APCBE005)"
      END
```

Batch Jobs

To reduce the workload of the Application Performance Management Team, AQM-APC can automatically perform the following functions in batch:

- Measure runaway job steps and issue alerts.
- Measure new or modified programs.
- Exclude certain job steps or programs from measurement by using the scope of work definitions for AQM-APC and InTune.
- Interpret the measurements based on user parameters.
- Save only important data from the reports created by your measurement tool.
- Manage historical data.

The **required** batch part of the Central Component consists of 4 jobs:

1. Job APCBJSMF gathers information about job step executions from SMF type 30 (subtype 4) records. Using this information, AQM-APC calculates statistical values for consumed elapsed time and service units and checks if the last job step execution exceeded them. If it finds a runaway, a pending Alert is created.

2. Job APCXJLIB determines which programs have been modified since the last APCXJLIB job execution and in which job steps these programs are called. AQM-APC then creates corresponding pending Alerts.

3. Job APCBJINV deletes measurement requests generated during previous cycles from the *InTune* queue and places new *InTune* measurement requests in the *InTune* queue based on the information in your daily run schedule and in the AQM-APC pending Alert list.

4. Job APCYJSUB evaluates measurement data sets that resulted from AQM-APC generated measurements. AQM-APC saves the resulting measurements if they are of interest or otherwise deletes them.

Additionally, a job is available for reorganization of the VSAM clusters.

The JCL illustrated in this chapter should be customized by replacing lower case italicized items with values that suit the needs of your environment. All JCL can be found in your AQM-APC product library, *prefix*.APC.CNTL.

☞ **Note:** All steps are fully **restart**able.

Job APCBJSMF

Job APCBJSMF gathers information about executed job steps from SMF Type 30 records (subtype 4). Your AQM-APC Scope of work definitions are used to determine which jobs to look at. Using this information, AQM-APC calculates statistical values for consumed elapsed time and service units and checks if the last job step execution exceeded them. If it finds a runaway, a pending alert is created.

Job APCBJSMF has the following scheduling considerations:

1. This job should execute after the nightly batch runs have been completed.

2. Step / program APCBASMF of this job interprets the SMF Type 30 records (subtype 4). Therefore, your SMF dump job must have completed prior to running this job step.

3. If, for example, this job is executed separately for each MVS image in a SYSPLEX, all copies of this job need strict serialization.

Job APCBJSMF consists of two steps, APCBASMF and APCBACAL, illustrated below:

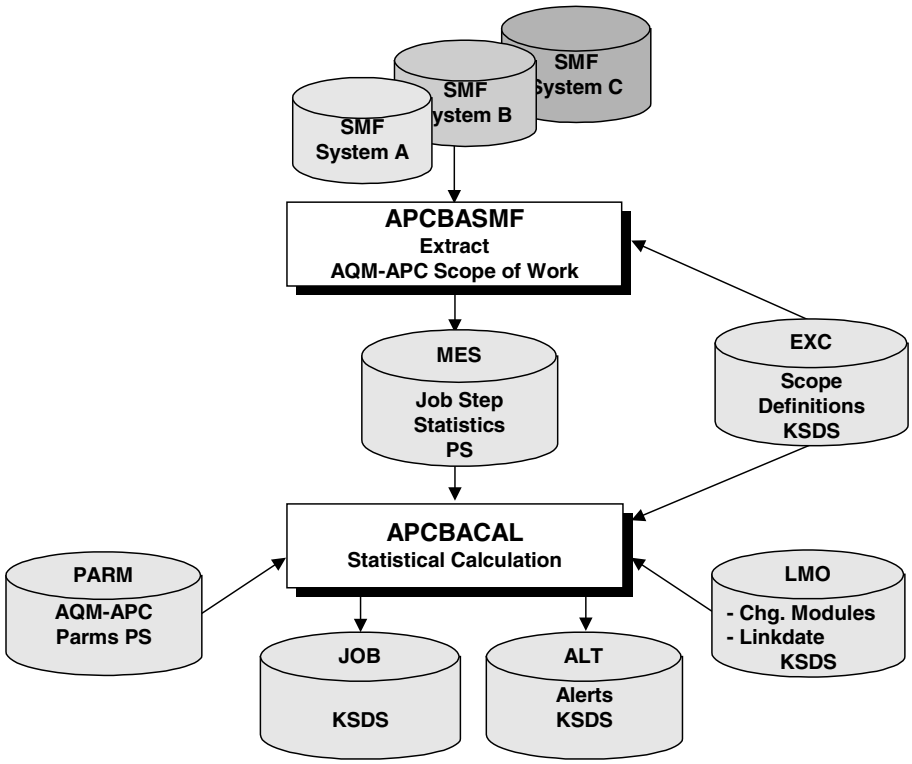


Figure 3: Flowchart of Job APCBJSMF

Selecting SMF Record Type 30 - Step APCBASMF

Program APCBASMF of job APCBJSMF selects type 30 records (subtype 4) from the SMF pool. It consists of two main parts:

1. The first part reads all inclusions and exclusions from scope of work control file (*prefix*.APC.KSDSEXC) and builds the AQM-APC Scope of work.

2. The second part reads all records from the SMF pool and selects all type 30 records (subtype 4). When the SMF extraction has been completed, the selected records will be tested against the AQM-APC Scope using a binary search. All records outside of the AQM-APC Scope will be discarded. The records falling within the AQM-APC Scope become the source of the output measurement records (ddname APCMES).

   Using ddname APCSMF, you provide AQM-APC with your SMF files. Use a DD concatenation in case of a multi-MVS system environment with multiple SMF files. The system name is part of the saved information.

JCL for Step APCBASMF

```
//APCBASMF EXEC PGM=APCBASMF
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//**  SMF POOL
//APCSMF   DD DSN=SMFPOOLMVS1,
//            DCB=(BUFNO=50,BFTEK=A),
//            DISP=SHR
//APCMES   DD DSN=&&LOG001,
//            DISP=(,PASS),
//            UNIT=SYSTS,
//            SPACE=(CYL,(1,5))
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,DISP=MOD
//*
```

Interpreting SMF Statistical Records - Step APCBACAL

Step APCBACAL of job APCBJSMF interprets statistical records from SMF. It contains three important parts: the 'statistical' part, the 'alert' part, and the 'maintenance' part.

The Statistical Part

The 'statistical' part reads all statistical measurement records from SMF. Now an attempt to find the job step in the job file will be tried. If the record is available, the statistical update follows. If the **JCL program name** is changed, step APCBACAL will detect the change, override the JCL program name, and delete all existing statistical information.

The condition code of the job step is checked. By default, condition codes of '0' or '4' are interpreted as valid for further statistical calculations. If you require additional condition codes to be defined as valid, please contact your first level support.

If the AQM-APC job step record is not already created, the SMF record will be analyzed. The condition code of the job is checked and if it is not valid, the newly created job step record will only have an increased 'ccode' (condition code) count. All other information from the SMF record will be discarded. However, if the condition code for the job step is valid, the job step's SMF information will be stored on the job step record and the measurement count will be set to 'one'.

If the AQM-APC job step record was previously created and the current condition code is not valid, the 'ccode' count will be increased and all other SMF information will be discarded. If the job step condition code is valid, the runaway test will be performed.

The runaway test is a statistical test used to detect runaway situations in the current SMF consumption values for the job step. The implemented test was first described by Nalimov and, simplified, is a check of the SMF measured value against the sum of the average of these values (as maintained by APC) plus twice the value of the standard deviation. If the measured value is above this sum, a runaway situation with over 95% probability has been detected.

In the runaway test, the SMF value for service units is tested first. If no runaway situation is found, the SMF value for elapsed time of the job step is tested. Then, if no runaway situation is found for the elapsed time value, the statistical values maintained by AQM-APC will be updated for:

- Service units
- Elapsed time
- CPU time
- EXCPs

Next, the current SMF measurement data will be stored in the history table and the measurement counter incremented by one.

If a runaway situation is detected for either service units or elapsed time, the statistical values and current SMF measurement data will be updated as described above and the 'alert' part of APCBACAL will be performed.

The Alert Part

The 'alert' part of APCBACAL handles all statistical exceptions. It has two main parts:

- First, if this job step is marked as a runaway situation, the statistical values will be saved in the alert area of the recorded job step and the job step frequency will be checked. If there is a high frequency for the job step, i.e., the job step is executed more than three times each week, AQM-APC will record this internally as a 'possible alert' and will mark the job step as 'critical' only. Otherwise, if this is not a high frequency job step, the alert will be generated immediately with a corresponding 'pending' state code.

- Second, the job step alert state is checked. If there is an alert, the measured values will be checked with the runaway test and if a runaway is detected again, the alert will be changed to a real one if the frequency of the job step is high. Otherwise, a new alert will be created only when the runaway test against the alerted values is positive, i.e., an alerted situation is imminent. If the runaway test is negative, the alert will be closed.

To prevent bulk alerts if the system is overloaded, automatic alert generation will be limited to five alerts in sequence for job steps with runaway elapsed times, i.e., the workload of the system is in the red area. In this event, an online message will appear to the first TSO user entering the AQM-APC online dialog.

The Maintenance Part

The 'maintenance' part of APCBACAL maintains the database synchronization of scope definitions and AQM-APC data, such as job information and alerted job steps.

If the AQM-APC Scope, InTune Scope, or TOP Scope of work has been changed via the online dialog, a maintenance function for job step statistics (contained in data set *prefix*.APC.KSDSJOB) and alert information (contained in data set *prefix*.APC.KSDSALT) is invoked. The following processing rules are used.

Table 6: Processing Rules for Maintaining the Scope Definitions

Kind of scope change	Job step statistics if out of scope	Alerts created by AQM-APC with state PEND if out of scope	Alerts created by USER with state PEND if out of scope
AQM-APC Scope	Deleted	Deleted	Unchanged
InTune Scope	Flagged. Visible in the job list of the AQM-APC dialog.	Automatically closed by AQM-APC with state CTHR.	Unchanged
TOP Scope	Flagged. Visible in the job list of the AQM-APC dialog.	Automatically closed by AQM-APC with state CIMP.	Unchanged

In addition, the importance calculation is performed again for all job steps. If, for some reason, job steps are no longer in the TOP Scope but a PENDing alert still exists for them, they are handled according to the 'Top Scope change' processing previously described.

When program APCBACAL completes execution, a statistical table is output to DDNAME APCREP.

JCL for Step APCBACAL

```
//APCBACAL EXEC PGM=APCBACAL
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//*
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//APCMES   DD DSN=&&LOG001,
//            DISP=(OLD,DELETE)
//APCNEW   DD DSN=NULLFILE,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCBALT1 DD DSN=prefix.APC.KSDSALT,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,
//            DISP=SHR
//*
```

Job APCXJLIB

Job APCXJLIB has the following functions:

- Detect modified programs included within the scope of work defined for AQM-APC and InTune.
- Interpret JCL for job name, step name, procedure step name, and JCL / application program name within the AQM-APC Scope of work.
- Maintain the AQM-APC Scope, InTune Scope, and TOP Scope of work on the product data base.
- Prepare InTune measurements for all scheduled jobs that have a pending measurement request (Alert) in AQM-APC.

Job APCXJLIB has the following scheduling considerations:

- Execution should be late in the afternoon, allowing enough time so the job ends before your batch window starts. It is important that this job does not start too early, otherwise AQM-APC will not pick up your last minute program modifications.
- One execution for all MVS images sharing the same LOADLIBs and JOBLIBs.
- One execution of this job per each AQM-APC installation.

This section provides a step by step overview of each APCXJLIB job step. This is the required sequence of steps and corresponds to the sequence in which the job steps will be discussed in this manual.

The data flow of APCXJLIB is illustrated in the flowchart on the next page followed by an illustration of the job step sequence.

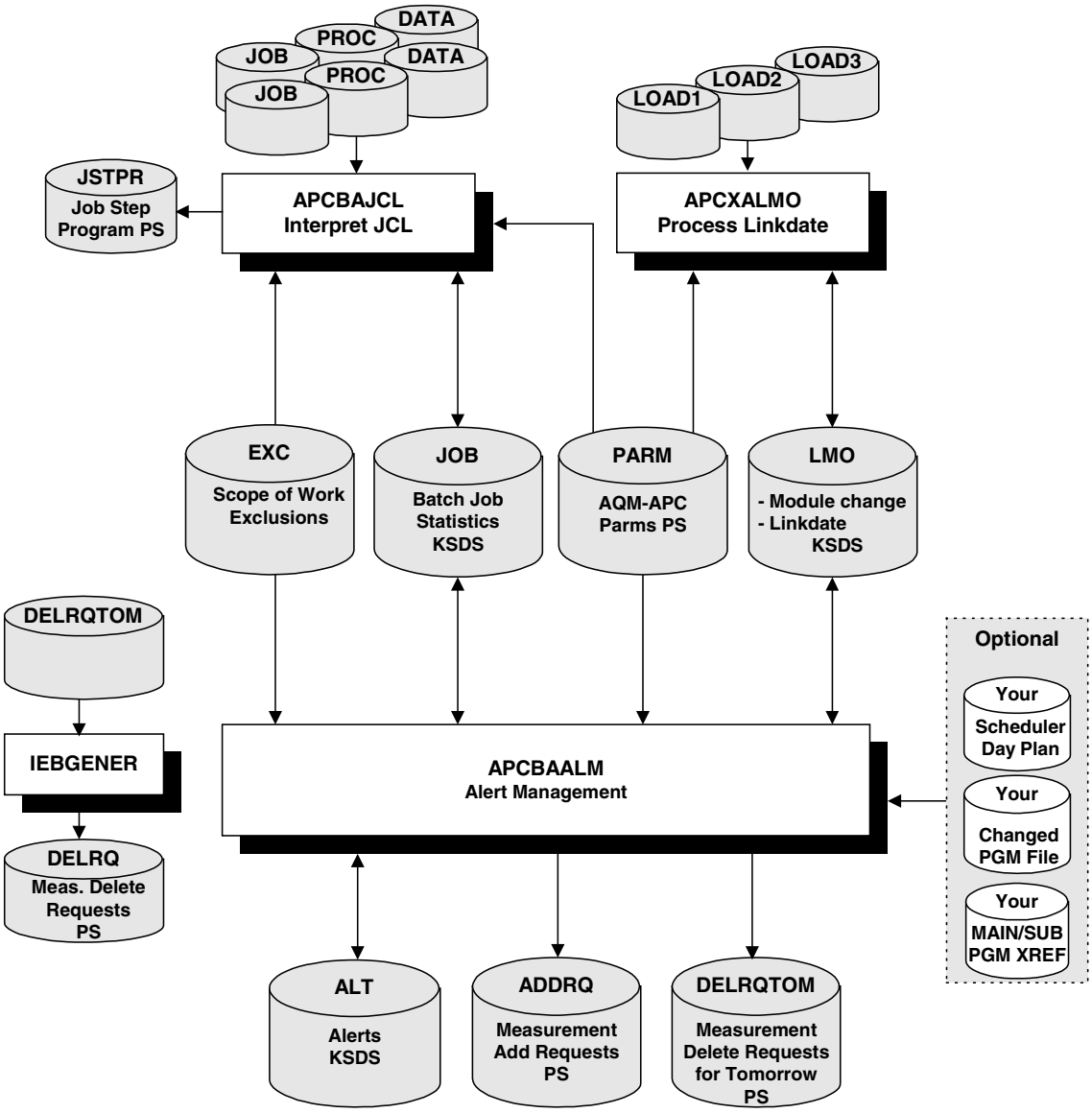


Figure 4: Flowchart of Job APCXJLIB

The following figure is an illustration of the job step sequence for job APCXJLIB. Each of these job steps is detailed in subsequent sections.

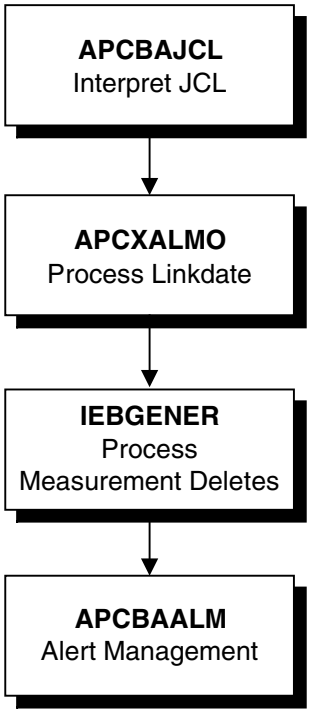


Figure 5: Job Step Sequence of Job APCXJLIB

JCL Scan - Step APCBAJCL

Program APCBAJCL scans all job libraries and procedure libraries defined by your parameter definitions for these libraries, see "Defining Parameters" on page 78. Additionally, the parameters for standard programs and standard procedures will be processed. Only jobs and programs falling within the AQM-APC Scope will be processed. The information regarding which application program is called in which step of which job is provided in the job cluster and in the interface file APCJSTPR.

New entries in the job cluster do not have statistical average values or history. If program APCBAJCL detects a new **application program name**, it overrides the existing application program name with the new name and deletes all existing statistical information. If the JCL change results in a new job step name and the old name is no longer used, AQM-APC will not delete the old name.

Variables in your JCL that begin with '&' are only processed in combination with the standard programs and standard procedures you provided as AQM-APC parameters in panels APCBPP04 and APCBPP06. By design, AQM-APC neither stores this JCL with variable substitutions in a data set nor does it recognize overwrites of a DD statement from a higher level nested procedure. For more information on standard programs, see "Defining Standard Programs" on page 91. For more information on standard procedures, see "Defining Standard Procedures" on page 93.

Report APCREP contains all warnings, i.e., JCL errors in the job statement or procedure not found. If there are many "procedure not found in proclib" errors, you should check if you have defined all PROCLIB's, see "Defining Procedure Libraries" on page 97.

As a result of the joblib / proclib / datalib scan, AQM-APC generates file APCJSTPR containing call information per job step. Normally this file is a temporary data set. If this information is of interest for further use within your company, you can change the JCL so that DD statement APCJSTPR refers to a permanent data set (see job step APCBAJCL).

Organization	QSAM	
Record length	80 bytes	
Record layout	1-8	job name
	9-16	step name
	17-24	procstep name
	25-32	program name
	33-80	filler

JCL for Step APCBAJCL

```
//APCBAJCL EXEC  PGM=APCBAJCL
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//APCNEW   DD DSN=NULLFILE,
//            DISP=SHR
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,
//            DISP=SHR
//APCJSTPR DD DSN=&&JSTPRT,
//            DISP=(,PASS),
//            DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSTS,
//            SPACE=(CYL,(1,5))
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=OLD
//*
```

Search for New and Changed Programs - Step APCXALMO

Step APCXALMO of job APCXJLIB searches the load libraries for new and changed programs. All load libraries are allocated dynamically and have to be defined through the user parameters, see "Defining Load Module Libraries" on page 95.

JCL for Step APCXALMO

```
//APCXALMO EXEC PGM=APCXALMO
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//*
```

Delete Requests - IEBGENER

An IEBGENER step within job APCXJLIB is used to copy the previous day's delete file (DELRQTOM) to the current day's delete request file (DELRQ). This step provides InTune with it's daily delete or cancel requests.

JCL for IEBGENER (Delete Requests)

```
//DELRQ    EXEC PGM=IEBGENER
//SYSUT1   DD DSN=prefix.APC.DELRQTOM,
//            DISP=OLD
//SYSUT2   DD DSN=prefix.APC.DELRQ,
//            DISP=OLD
//SYSIN    DD DUMMY
//SYSPRINT DD DUMMY
//*
```

Perform Alert Management - Step APCBAALM

Step APCBAALM of job APCXJLIB performs alert management for changed load modules.

1. Sublevel modules with a 'changed' state are reset.

   – All records from load module files with state 'changed' will be read into a module table.

   – If sub / main program external reference file APCSPMP is not used, then all job steps will be read from the job file and a 'binary search' of the module table will be performed for all relevant programs. When the search is successful, the module name will be marked in the table.

   – All unmarked modules in the table will be checked. If the link date is **not** older than one month, the modules will be marked in the table.

   – All unmarked modules in the module table will be reset from state 'changed' to 'unchanged'.

2. **OPTIONAL INTERFACES** are performed.

   – If the DD name APCDAY allocates a PS file with a fixed blocked record length of 80, edit the AQM-APC Parm file and provide record JPxx, where *xx* indicates the offset (relative to zero) of the job name in your scheduler day plan file.

   – Module changed interface is performed. If an AQM-APC user already has an overview of all changed programs with the change date or if program changes are not reflected in load modules (i.e., execution is done through a loader or a language interpreter is used), then a file defined at DD statement APCCHLMO will be used. If used, file APCCHLMO should be defined as follows:

Organization	PS
Record length	16 bytes
Record layout	1-8 program name 9-16 change date (YYYYMMDD)
Sort order	entire record, ascending

   ☞ **Note:** If you are using the Natural programming language, you can use the supplied program to create this interface file (member NATURAL on *user*.APC.PLIB).

– Cross referencing subprograms interface is performed. A file defined at DD statement APCSPMP establishes which main program has to be measured if a subprogram has been changed or inserted. This section is applicable only to programs that are **dynamically called**. This file can allow users to access cross reference information about subprograms being called in main programs (see DSN=NULLFILE in the JCL for step APCBAALM). The file should be defined as follows:

Organization	PS	
Record layout	1-8	subprogram name
	9-16	main program name
Sort order	entire record, ascending	

Each record within file APCSPMP contains names for both the subprogram and the main calling program. Since a subprogram may be called from many different main programs, the entire record is used as a sort field. If you have not defined a reference file, AQM-APC will detect program modifications in subprograms but will not be able to measure them, because it cannot find any JCL to associate modified subprograms with their main calling programs.

If a subprogram is changed, only one main program will be measured even if the subprogram is used in several main programs. If APCSPMP is empty, all changed modules will be checked to see if they exist in the job file. If not, the changed module will be reset.

3. All records from load module file *prefix*.APC.KSDSLMO are read. All records with a 'changed' state are saved in a table of up to 4096 entries. Next, all records from the day plan (DD statement APCDAY) are read. Each job name from the day plan is the entry key used to access AQM-APC's batch job step file, *prefix*.APC.KSDSJOB. Now all corresponding programs for job steps associated with jobs in the day plan are checked against the load module table using a 'binary search'. If the search is successful, the 'importance' of that job step is calculated as the sum of the base 2 logarithm of service units, elapsed time, and job step frequency. The importance is used to identify and rank job steps consuming the most resources. The following algorithm is used for calculating importance:

$$\text{importance} = \log_2(\text{srvu}) + \log_2(\#\text{ of executions per month}) + \log_2(\text{elpsd})$$

This calculated importance factor will be used to sort entries in the load module table and determine which multiple-use programs are of greatest importance. At 'end of file processing' of the day plan file, this load module table becomes the source of job step alerts, sorted by importance. The alert type used is 'MODC' for 'module changed'. The alert state is 'pending'.

If there is no day plan file in use, step APCBAALM runs slightly differently. After a load module table is built, the batch job step file will be read sequentially. The program name from each entry in the job step file is checked against the load module table using a 'binary search' and if the search is successful, processing is identical to that described when a day plan file is used.

At the end of this procedure, the load module file (prefix.APC.KSDSLMO) will be updated to reset the state from 'changed' to 'unchanged' for all modules processed from the load module table.

4. InTune requests for all pending alert entries are created, limited to the maximum number of requests defined by the user in AQM-APC parameters. First, all records from the alert file with a 'pending' state -- including previously created pending alert records -- are read into the same table as above. Next, the day plan is read again and job names from the day plan will be used to search the table using a 'binary search'. If the search is successful, a measurement request (add and delete) for the alerted job step will be generated. Program APCBAALM will be finished at EOF of the day plan or when the InTune limit, defined by the user in AQM-APC parameters, is reached. If no day plan exists, all user alerts (with reason code 'USER') have a higher processing priority than AQM-APC generated alerts.

   In additional, database maintenance is performed on AQM-APC control files for all scope of work definitions (AQM-APC Scope, InTune Scope, and TOP Scope) contained in the AQM-APC parameters. For more information, see the description of the APCBACAL 'Maintenance' part.

The following is an illustration of the JCL for job step APCBAALM:

JCL for Step APCBAALM

```
//APCBAALM EXEC  PGM=APCBAALM
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//
//***      SCHEDULER DAYPLAN FILE (FB,RECL=80)
//APCDAY   DD DSN=NULLFILE,
//            DISP=SHR
//APCCHLMO DD DSN=NULLFILE,
//            DISP=SHR
//APCSPMP  DD DSN=NULLFILE,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBALT1 DD DSN=prefix.APC.KSDSALT,
//            DISP=SHR
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,
//            DISP=SHR
//APCADDRQ DD DSN=prefix.APC.ADDRQ,
//            DISP=OLD
//APCDELRQ DD DSN=prefix.APC.DELRQTOM,
//            DISP=OLD
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//*
```

Job APCBJINV - Add New InTune Requests

Job APCBJINV performs all InTune CANCEL and INVOKE commands that are created by job APCXJLIB to delete all of yesterday's requests and add all new measurement requests.

Job APCBJINV has the following scheduling considerations:

- Execute daily before batch production and after job APCXJLIB has finished.
- Execute this job in every MVS image that your batch production runs in and that InTune is available in.

Job APCBJINV consists of step APCYAADD as illustrated in the following figure:

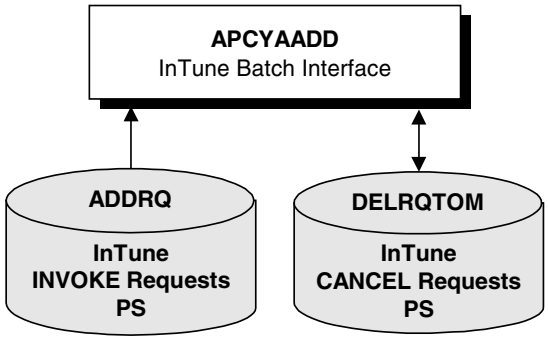


Figure 6: Flowchart of Step APCYAADD

Program APCYAADD of job APCBJINV inserts the INVOKE and CANCEL requests into InTune.

JCL for Step APCYAADD

```
//JOBCARD…
//*********************************************************************
//* AQM-APC - APCJJINV                                                *
//* MAINTENANCE: APM TEAM                                             *
//* ACTION:      EXECUTE INTUNE  ORDERS                               *
//* FUNCTION:    DAILY MEASUREMENT OF BATCH JOBS                      *
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//APCYAADD  EXEC  PGM=APCYAADD
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//APCADDRQ DD DSN=prefix.APC.ADDRQ,
//            DISP=OLD
//APCDELRQ DD DSN=prefix.APC.DELRQTOM,
//            DISP=OLD
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
```

Jobs APCYJSUB and APCYJNAR - Process *Intune* Measurement

Job APCYJSUB evaluates *Intune* measurement which resulted from AQM-APC generated measurements. To get the *InTune* measurement, an InTune program must be called. Job APCYJNAR contains a procedure to do so. Additionally, an AQM-APC program is called to interpret the *InTune* measurement. AQM-APC saves or discards an *InTune* measurement depending on the consumption during step execution, user defined parameters, and alert reasons. The *InTune* measurements are kept or deleted as determined by parameter "Delete AQM-APC processed sample ds". See "Measurement DS processing" on page for more details. Job APCYJSUB automatically creates and submits APCYJNAR jobs as many times as needed to process all *InTune* measurements.

Job APCYJSUB has the following scheduling considerations:

- Execute early in the morning after the nightly batch runs have been completed. It is also important that the job is not started too soon. This will allow AQM-APC to collect more *InTune* measurement information.

- If you are also using the CICS Feature or IMS Feature, make sure that CICS or IMS *InTune* measurements have been completed. These are provided by jobs APCCJINV and APCIJINV respectively.

- There should be at least one execution per AQM-APC installation per day.

In order to get the *InTune* measurement results available in AQM-APC as soon as possible, the AQM-APC Server will submit job APCYJNAR any time a measured job step has terminated. If you use this functional benefit, job APCYJSUB is needed only for measurements that are not controlled by AQM-APC and for the CICS and IMS/DC measurements.

Since all measurements of CICS or IMS/DC regions must be processed in **one** APCYJNAR job, job APCYJSUB must be provided with the names of the regions. CICS and IMS/DC add monitor invoks for *InTune* will be interpreted by job APCYJSUB for the regions identified in the following members;

- To identify all CICS regions:

```
APCJCIC  DD  DSN=prefix.APC.CNTL(APCCCINV),DISP=SHR
```

- To identify all IMS regions:

```
APCJIMS  DD  DSN=prefix.APC.CNTL(APCICINV),DISP=SHR
```

The JCL for job APCYJNAR is found at DDNAME INTUPROF of job APCYJSUB. It is input to the internal reader. Make sure that the job card of APCYJNAR is customized to fit your environment.

☞ **Note:** You can choose any kind of rename for the sample data set, e.g., for a test installation.

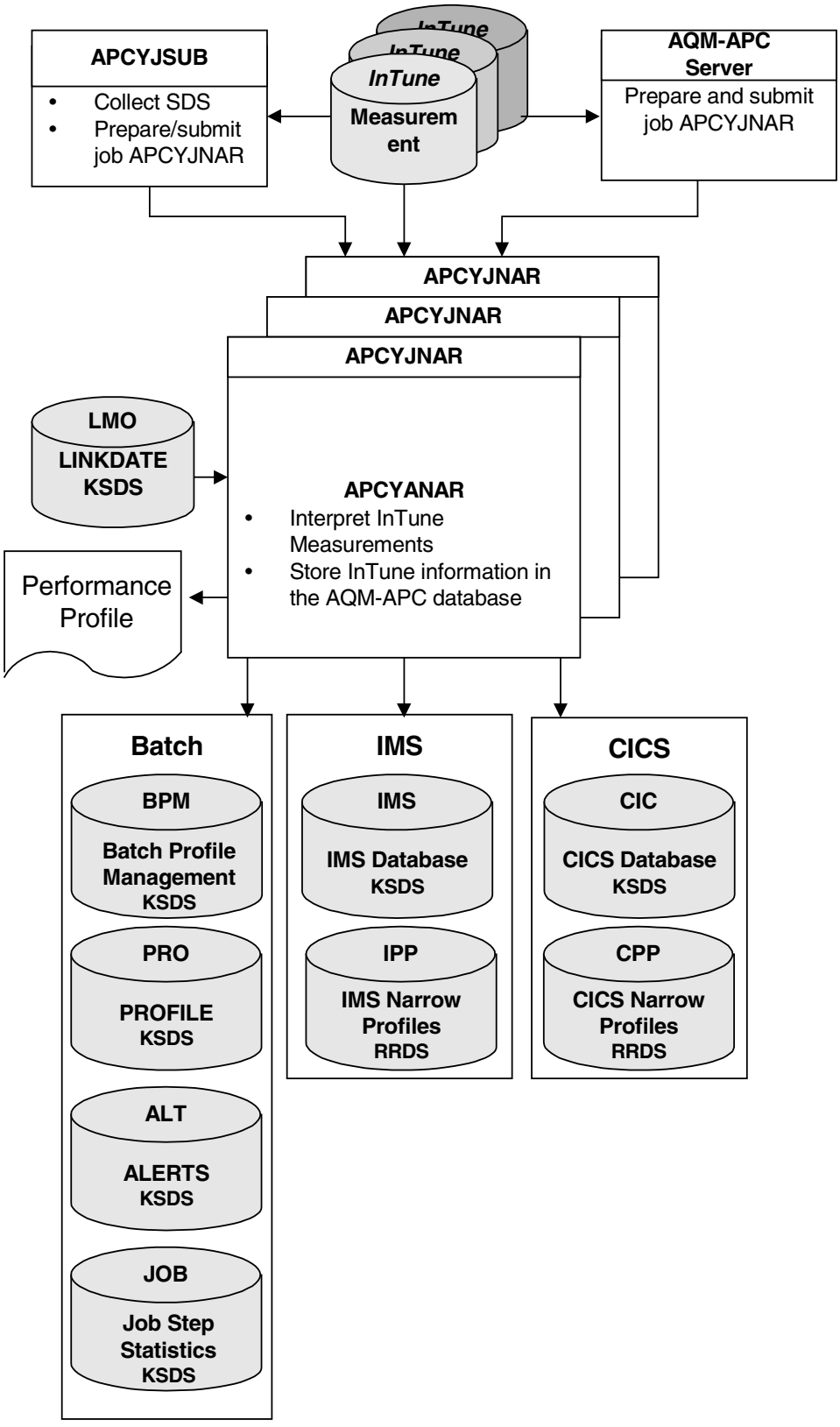


Figure 7: Flowchart of Jobs APCYJSUB and APCYJNAR

Job APCYJSUB - Evaluate Sample Data Sets

Job APCYJSUB performs the following functions:

1. Collect all *InTune* measurements belonging to the user defined prefix. See " Measurement DS processing" on page 85 for details on how to define this prefix. The maximum number of sample data sets that can be processed with one execution of job APCYJSUB is 1000.

2. Decides if the measurement has already been processed by AQM-APC.

3. Groups all CICS and IMS/DC processing in an execution of job APCYJNAR. Regions are identified by processing the APCCCINV and APCICINV members, respectively. The maximum number of sample data sets that can be processed on a single day for either IMS or CICS is 100.

4. Submits job APCYJNAR.

JCL for Job APCYJSUB

```
//JOBCARD…
//*
//*
//*
//* JCL WHICH CONTAINS CUSTOMIZED PROCEDURE TUNBATCH
//* DEFAULT: APC-CNTL-LIBRARY
//*
//JCLLIBR  JCLLIB ORDER=prefix.APC.CNTL
//*
//*********************************************************************
//*                                                                   *
//* AQM-APC: APCYJNAR                                                 *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//*                                                                   *
//* FUNCTION:    DAILY INTERPRETATION OF NEW AQM-APC INITIATED        *
//*              INTUNE MEASUREMENTS                                  *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//APCTPROF PROC APCNDS=APCNDS,
//            APCCSV=APCCSV
//IEFBR14T EXEC PGM=IEFBR14
//APCREPDS DD DISP=(NEW,CATLG),
//         DCB=(RECFM=FBA,BLKSIZE=0,LRECL=81),
//         SPACE=(CYL,(1,1),RLSE),
//         UNIT=SYSDA,
//         DSN=&APCNDS
//APCCSVDS DD DISP=(NEW,CATLG),
//         DCB=(RECFM=VB,BLKSIZE=0,LRECL=4096),
//         SPACE=(CYL,(1,1),RLSE),
//         UNIT=SYSDA,
//         DSN=&APCCSV
//         PEND
//*
```

```
//*********************************************************************
//*                                                                   *
//* AQM-APC                                                           *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//* ACTION:      INTERPRETATION OF INTUNE NARROW PROFILE(S)           *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   APM AG   ZURICH  2002                             *
//*********************************************************************
//*
//APCPPROF PROC   SUB='A'
//*
//*********************************************************************
//* CREATE TEMPFILE
//*********************************************************************
//IEFBR14A EXEC PGM=IEFBR14
//TEMPNARR DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FB,LRECL=80),
//            SPACE=(CYL,(2,2)),
//            UNIT=SYSDA
//TEMPCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FBA,LRECL=121,BLKSIZE=23474),
//            SPACE=(TRK,(1,1)),
//            UNIT=SYSDA
//TEMPCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FB,LRECL=80),
//            SPACE=(TRK,(1)),
//            UNIT=SYSDA
```

```
//*********************************************************************
//* INTERPRETE STROBE PROFILE
//*********************************************************************
//APCYANAR EXEC PGM=APCYANAR,PARM='&SUB'
//*
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//LISTCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(SHR,,DELETE)
//LISTCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(SHR,,DELETE)
//APCNAR   DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=SHR
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//APCBIPP1 DD DSN=prefix.APC.RRDSIPP,
//            DISP=SHR
//APCBCPP1 DD DSN=prefix.APC.RRDSCPP,
//            DISP=SHR
//APCBPRO1 DD DSN=prefix.APC.KSDSPRO,
//            DISP=SHR
//APCBBPM1 DD DSN=prefix.APC.KSDSBPM,
//            DISP=SHR
//APCBALT1 DD DSN=prefix.APC.KSDSALT,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCIPRO1 DD DSN=prefix.APC.KSDSIMS,
//            DISP=SHR
//APCCPRO1 DD DSN=prefix.APC.KSDSCIC,
//            DISP=SHR
//PRINTPRF DD SYSOUT=*
//APCSALT  DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCREP   DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
```

```
//*********************************************************************
//* DELETE TEMPFILE
//*********************************************************************
//*
//IEFBR14B EXEC PGM=IEFBR14,COND=EVEN
//TEMPNARR DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=(MOD,DELETE)
//TEMPCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(MOD,DELETE)
//TEMPCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(MOD,DELETE)
//*********************************************************************
//         PEND
//*-----------------------------------------------------
//* DON'T CHANGE THE NAMES OF THE FOLLOWING SET-VARIABLES
//* OTHERWISE THE GENERATION PROCESS PRODUCE NO RESULT
//* THE PARAMETER VALUE ITSELF IS VARIABLE.
//*-----------------------------------------------------
//*SET APCTDCB='(RECFM=FBA,BLKSIZE=0,LRECL=81)'
//*SET APCTSPC='(CYL,(1,1),RLSE)'
//*SET APCTUNI='SYSDA'
// SET APCCNTL='prefix.APC.CNTL'
// SET APCPMEM='TUNPARM'
//*
```

Job APCYJNAR- Interpret Measurements

Job APCYJNAR performs the following functions:

- Generate and interpret *InTune* Performance Measurements.
- Save the history information.
- If the job step execution belongs to the TOP Scope, store the Performance Measurements as determined by the user.
- Delete the sample data sets as defined by the user in the AQM-APC parameters.
- Store the Performance Profiles when one of the values for CPU Time, Session Time or EXCPs exceeds the defined threshold.
- Provides the AQM-APC alert management that changes the alert states from PEND to OPEN, CIMP, or CTHR.

  There are exceptions to how the PEND state is managed:

  - Alert reason SRVU and ELPS: If the measured job step execution belongs to the TOP Scope, the alert state PEND is unchanged. This means another measurement will occur; otherwise, the alert state will be changed to CIMP and no further measurement will occur.
  - Alert reason MODC: The alert state PEND will be changed to CIMP, whether the job step belongs to the TOP Scope or not. This means there will be no further measurement.
  - Alert reason USER: The alert state PEND is unchanged, whether the job step belongs to the TOP Scope or not. This means another measurement will occur.

At DD name APCSALT, each new alert that is opened will be provided along with the relevant alert information. This makes it very easy to use this file and the information for further processing in any organization. Using a simple REXX procedure, the key data is easy to gather and use in a problem management product or a mailing facility. Alerts for job steps and CICS or IMS transactions will be provided.

The following is an example of a job step alert.

```
$$ALERT
$RQ=Q                                  INTUNE REQUEST A(CTIVE) / Q(UEUED)
$JN=PRLZ1770LZPROC1 LZSTP02            JOBSTEP NAME
$SD=2002-09-04                         SESSION DATE AS YYYY-MM-DD
$ET=0043                               ELAPSED (SESSION) TIME IN MINUTES
$CT=0012                               CPU TIME IN MINUTES
$WT=0017                               WAIT TIME IN MINUTES
$ST=0012                               STRETCH TIME IN MINUTES
$EX=00000000                           EXCPS IN THOUSANDS
$AT=006                                ALERT TEXT WITH NNN LINES
2002-09-04 AQM-APC ALERT ID 16049    BY SRVU
           ------------------------------------------------------------
           JOB: PRLZ1770 LZPROC1  LZSTP02   PGM: P5LZ770
           EXEC: 2002-09-03  22:00  SYS: DSYS      CC: 0000
           CPU: 00012  ELPSD: 00037  EXCPS: 000000  SRVU: 036559  I: 23
           ------------------------------------------------------------
$$ALEND
```

The following is an example of a transaction alert:

```
$$ALERT
$SS=CICS                               SUBSYSTEM ( CICS / IMS )
$SN=PNP1                               SYSTEM NAME
$TX=OKSS                               TRANSACTION NAME
$CM=00627                              MEASURED CPU TIME %
$CA=00022                              AVERAGE CPU TIME %
$AT=005                                ALERT TEXT WITH NNN LINES
2002-09-09 AQM-APC ALERT ID 16187    BY STAT
           ------------------------------------------------------------
           TRANSACTION : OKSS       SYSTEM : PNP1       PGM : CIC1PNP1
           CPU%  MEAS  :   6.27   AVERAGE :    .22   STD.DEV :    .24
           ------------------------------------------------------------
$$ALEND
```

The program report (DD statement APCREP) provides a detailed overview of the activities per monitor dataset. Every measurement is interpreted only once. So if the scopes of work are changed, the new scopes are only considered on an ongoing basis.

The following is a JCL illustration of Job APCYJNAR:

JCL for Job APCYJNAR

```
//JOBCARD…
//*
//*
//*
//* JCL WHICH CONTAINS CUSTOMIZED PROCEDURE TUNBATCH
//* DEFAULT: APC-CNTL-LIBRARY
//*
//JCLLIBR  JCLLIB ORDER=prefix.APC.CNTL
//*
//*********************************************************************
//*                                                                   *
//* AQM-APC: APCYJNAR                                                 *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//*                                                                   *
//* FUNCTION:    DAILY INTERPRETATION OF NEW AQM-APC INITIATED        *
//*              INTUNE MEASUREMENTS                                  *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//APCTPROF PROC APCNDS=APCNDS,
//            APCCSV=APCCSV
//IEFBR14T EXEC PGM=IEFBR14
//APCREPDS DD DISP=(NEW,CATLG),
//         DCB=(RECFM=FBA,BLKSIZE=0,LRECL=81),
//         SPACE=(CYL,(1,1),RLSE),
//         UNIT=SYSDA,
//         DSN=&APCNDS
//APCCSVDS DD DISP=(NEW,CATLG),
//         DCB=(RECFM=VB,BLKSIZE=0,LRECL=4096),
//         SPACE=(CYL,(1,1),RLSE),
//         UNIT=SYSDA,
//         DSN=&APCCSV
//         PEND
//*
//*********************************************************************
//*                                                                   *
//* AQM-APC                                                           *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//* ACTION:      INTERPRETATION OF INTUNE NARROW PROFILE(S)           *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   APM AG   ZURICH  2002                             *
//*********************************************************************
//*
//APCPPROF PROC   SUB='A'
//*
```

```
//*******************************************************************
//* CREATE TEMPFILE
//*******************************************************************
//IEFBR14A EXEC PGM=IEFBR14
//TEMPNARR DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FB,LRECL=80),
//            SPACE=(CYL,(2,2)),
//            UNIT=SYSDA
//TEMPCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FBA,LRECL=121,BLKSIZE=23474),
//            SPACE=(TRK,(1,1)),
//            UNIT=SYSDA
//TEMPCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(MOD,CATLG),
//            DCB=(RECFM=FB,LRECL=80),
//            SPACE=(TRK,(1)),
//            UNIT=SYSDA
```

```
//*******************************************************************
//* INTERPRETE STROBE PROFILE
//*******************************************************************
//APCYANAR EXEC PGM=APCYANAR,PARM='&SUB'
//*
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//LISTCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(SHR,,DELETE)
//LISTCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(SHR,,DELETE)
//APCNAR   DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=SHR
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//APCBIPP1 DD DSN=prefix.APC.RRDSIPP,
//            DISP=SHR
//APCBCPP1 DD DSN=prefix.APC.RRDSCPP,
//            DISP=SHR
//APCBPRO1 DD DSN=prefix.APC.KSDSPRO,
//            DISP=SHR
//APCBBPM1 DD DSN=prefix.APC.KSDSBPM,
//            DISP=SHR
//APCBALT1 DD DSN=prefix.APC.KSDSALT,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCIPRO1 DD DSN=prefix.APC.KSDSIMS,
//            DISP=SHR
//APCCPRO1 DD DSN=prefix.APC.KSDSCIC,
//            DISP=SHR
//PRINTPRF DD SYSOUT=*
//APCSALT  DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCREP   DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//*******************************************************************
//* DELETE TEMPFILE
//*******************************************************************
//*
//IEFBR14B EXEC PGM=IEFBR14,COND=EVEN
//TEMPNARR DD DSN=prefix.APC.TEMPFILE.NARROW,
//            DISP=(MOD,DELETE)
//TEMPCAT  DD DSN=prefix.APC.TEMPFILE.CATN,
//            DISP=(MOD,DELETE)
//TEMPCMD  DD DSN=prefix.APC.TEMPFILE.CMDN,
//            DISP=(MOD,DELETE)
//*******************************************************************
//         PEND
```

```
//*-------------------------------------------------------
//* DON'T CHANGE THE NAMES OF THE FOLLOWING SET-VARIABLES
//* OTHERWISE THE GENERATION PROCESS PRODUCE NO RESULT
//* THE PARAMETER VALUE ITSELF IS VARIABLE.
//*-------------------------------------------------------
//*SET APCTDCB='(RECFM=FBA,BLKSIZE=0,LRECL=81)'
//*SET APCTSPC='(CYL,(1,1),RLSE)'
//*SET APCTUNI='SYSDA'
// SET APCCNTL='prefix.APC.CNTL'
// SET APCPMEM='TUNPARM'
//*
```

Scheduling the Batch Jobs

This section provides a recommended time line for scheduling the batch jobs. The specific scheduling considerations of each job are detailed with the corresponding job section within this chapter. It is recommended that all Central Component batch jobs be executed daily.

☞ **Note**: It is strongly recommended that jobs APCYJSUB, APCBJSMF, and APCXJLIB be executed serially and in the specified order. Failure to do so may produce unpredictable results.

The following illustration provides a guideline regarding how the execution of these jobs should be planned.

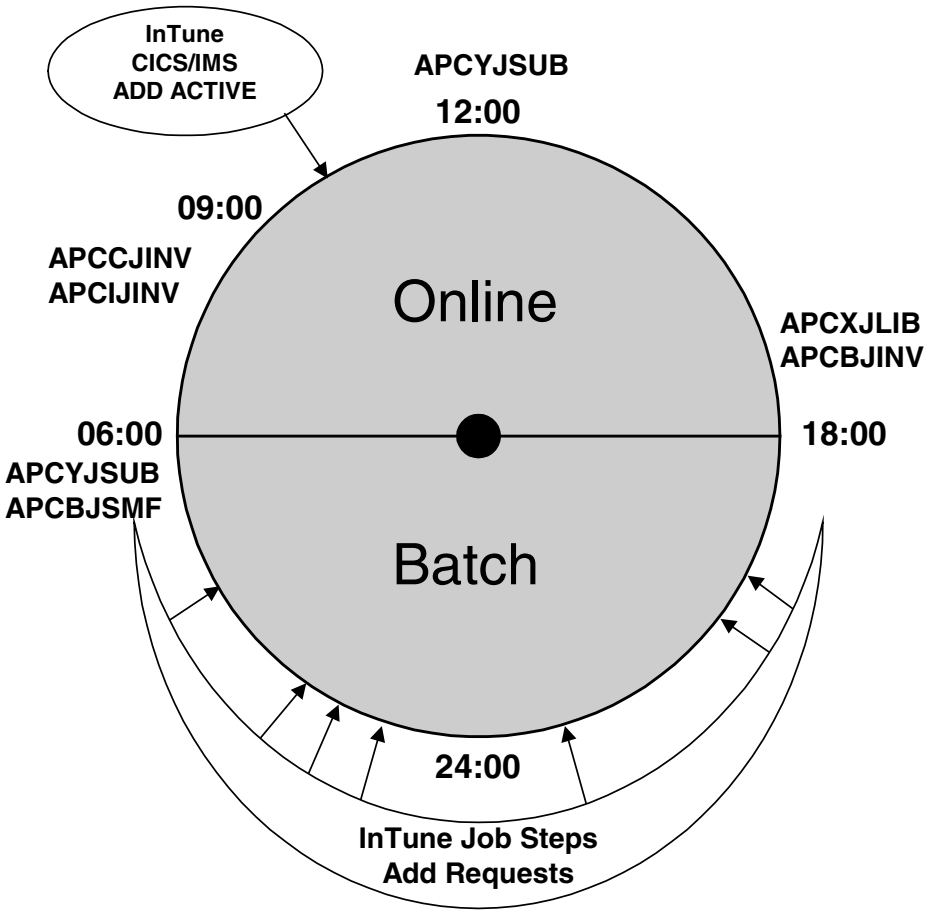


Figure 8: Job Scheduling Overview

AQM-APC for *InTune* In a Multiple System Environment

If your work spans multiple systems, it is often difficult to determine on which computer a job is being processed. This means that *InTune* measurement requests need to be entered in every computer system in order to guarantee that your job will actually be measured. AQM-APC can cope with this situation and thereby reduce your workload considerably.

☞ **Note:** If used in a parallel SYSPLEX environment, AQM-APC should be run as in a single system environment because *InTune* Version 2 takes care of spreading the measurement requests. In this case, enter *Intune* parameter SYSTEM=*ALL as an additional parameter on the panel for General Parameters, see page 83.

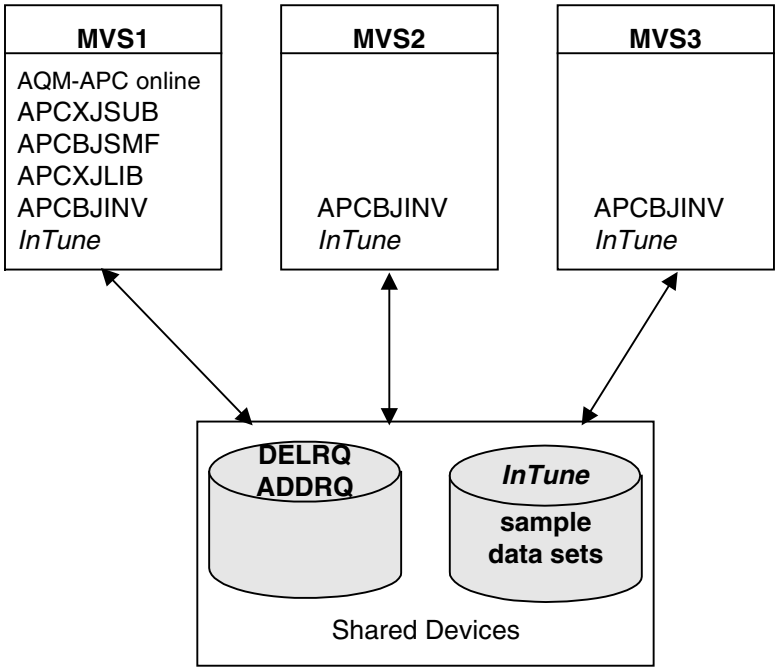


Figure 9: AQM-APC in a Multiple System Environment

Job APCXJREO - Maintenance and Reorganization

Job APCXJREO performs the following AQM-APC database maintenance functions:

- Deletes expired data according to its lifetime as defined by the general parameter called 'Delete data if older than'. This parameter must be defined on the General Parameters panel for each AQM-APC component (Central Component, CICS Feature, and IMS Feature).

- Physically reorganizes all AQM-APC clusters using an IDCAMS.

Job APCXJREO has the following scheduling considerations:

- Exclusive control of all AQM-APC VSAM clusters is required. Therefore, no other AQM-APC job can be executed at the same time. All TSO users must exit the AQM-APC online and, if installed, the AQM-APC AQM-APC Server must be stopped.

- Execute at least once a month.

- The middle of the month is recommended.

When this job has completed, verify its condition code. If the condition code is not 0, e.g., resulting from a space problem, correct the problem and restart the job in the step in which the problem occurred.

Program APCXAREO

Program APCXAREO deletes the information that has expired based on the user defined lifetime. All deleted entries will be reported in the SYSOUT DD statement APCREP. The program consists of the following parts:

1. The Central Component KSDS clusters are checked. A previously generated REPRO file of the *prefix*.APC.KSDSJOB cluster triggers the processing. Each entry will be compared against the user defined lifetime (see the 'Delete job data if older than' parameter in section "General Parameters" on page 83). If the lifetime is expired, meaning the job step has not executed during the last *nn* number of months, the job entry will be discarded and all corresponding entries in the alert files and measurements, too. Otherwise, the entry will be loaded into the *prefix*.APC.KSDSJOB cluster.

2. All alert entries of the Central Component will be compared with the corresponding lifetime values for certain alert states that may be user defined in Alert Delete Options. If the lifetime of the alert is expired, the alert entry will be deleted. See section "Central Component Alert Delete Options" on page 180 for more information about deleting alerts.

3. All stored data of the CICS and IMS/DC Features will be compared with their corresponding lifetime, user defined as general parameter called 'Delete data if older than'. If the lifetime is expired, the alert entry will be deleted.

The job JCL for APCXJREO begins on the following page.

JCL for Job APCXJREO

```
//JOBCARD...
//*********************************************************************
//*                                                                   *
//* AQM-APC: APCXJREO                                                 *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//* ACTION:      PERIODIC MAINTENANCE AND REORGANISATION OF           *
//*              AQM-APC VSAM KSDS CLUSTERS.                          *
//*                                                                   *
//* FUNCTION:    ONE CATALOGED REPRO FILE IS USED FOR ALL CLUSTER     *
//*              REORGANISATION. IF THE JOB TERMINATES WITH COND      *
//*              CODE 0 THIS REPRO FILE HAS BEEN DELETED. OTHERWISE   *
//*              A PROBLEM OBVIOUSLY HAS BEEN OCCURED WHICH           *
//*              HAS TO BE FIXED, E.G. VOLUME SPACE, AND THIS JOB     *
//*              HAS TO BE RESTARTED WITH THE STEP NAME THE PROBLEM   *
//*              OCCURED. IN ORDER TO SECURE THIS PROCESS THE         *
//*              CONTENTS OF THE REPRO FILE IS CHECKED BY THE PROG.   *
//*              APCXARCK. IF THE REPRO FILE CONTENTS FITS TO THE     *
//*              CLUSTER THE COND CODE IS 0, OTHERWISE IT IS 8.       *
//*                                                                   *
//* FILES :      JOB FILE                                             *
//*              ALERT FILE                                           *
//*              BATCH MEASUREMENT MANAGEMENT FILE                    *
//*              BATCH MEASUREMENT FILE                               *
//*              EXCLUSION FILE                                       *
//*              LOAD MODULE FILE                                     *
//*              IMS MEASUREMENT FILE                                 *
//*              CICS MEASUREMENT FILE                                *
//*                                                                   *
//*     COPYRIGHT   A.P.M. AG   ZURICH  1999 - 2002                   *
//*********************************************************************
//*    CREATE REPRO FILE
//*********************************************************************
//CRE1     EXEC PGM=IEFBR14,COND=(0,NE)
//TEMPFILE DD DSN=prefix.APC.REPROALL,
//            DISP=(MOD,CATLG),
//            DCB=(LRECL=8189,RECFM=VB,BLKSIZE=8193),
//            SPACE=(CYL,(50,10)),
//            UNIT=SYSDA
//*
//*********************************************************************
//*    JOB  REPRODUCTION
//*********************************************************************
//JOB1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSJOB
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCXCREP)
//*
```

```
//JOB2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFJOB)
//*
//JOB3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=JOB
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//*******************************************************************
//*    MAINTENANCE OF AQM-APC FILES                                 *
//*    DELETE ALL ENTRIES WITH EXPIRED LIFETIME                     *
//*    THE BATCH MAINTENANCE IS TRIGGERED BY THE JOB FILE           *
//*******************************************************************
//*
//STEPREO  EXEC PGM=APCXAREO,COND=(0,NE)
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//APCPARAM DD  DISP=SHR,
//             DSN=prefix.APC.PARMS
//APCJOB   DD  DISP=SHR,
//             DSN=prefix.APC.REPROALL
//APCBEXC1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSEXC
//APCBJOB1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSJOB
//APCBALT1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSALT
//APCBBPM1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSBPM
//APCBPRO1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSPRO
//APCIPRO1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSIMS
//APCCPRO1 DD  DISP=SHR,
//             DSN=prefix.APC.KSDSCIC
//APCREP   DD  SYSOUT=*
//APCEREP  DD  SYSOUT=*
//*
//*******************************************************************
//*    REORG OF ALL  AQM-APC FILES WITHOUT JOB FILE                 *
//*******************************************************************
//*
//*******************************************************************
//*    EXC
//*******************************************************************
//EXC1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSEXC
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
```

```
//          DSN=prefix.APC.CNTL(APCXCREP)
//*
//EXC2      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//SYSIN DD DISP=SHR,
//          DSN=prefix.APC.CNTL(DEDEFEXC)
//*
//EXC3      EXEC PGM=APCXARCK,COND=(0,NE),PARM=EXC
//STEPLIB   DD  DISP=SHR,
//              DSN=prefix.APC.LOAD
//TEMP      DD  DISP=OLD,
//              DSN=prefix.APC.REPROALL
//*
//EXC4      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//TEMP      DD  DISP=OLD,
//              DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//          DSN=prefix.APC.CNTL(REPROEXC)
//*****************************************************************
//*    LMO
//*****************************************************************
//LMO1      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN        DD  DISP=OLD,
//              DSN=prefix.APC.KSDSLMO
//TEMP      DD  DISP=OLD,
//              DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//          DSN=prefix.APC.CNTL(APCXCREP)
//*
//LMO2      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//          DSN=prefix.APC.CNTL(DEDEFLMO)
//*
//LMO3      EXEC PGM=APCXARCK,COND=(0,NE),PARM=LMO
//STEPLIB   DD  DISP=SHR,
//              DSN=prefix.APC.LOAD
//TEMP      DD  DISP=OLD,
//              DSN=prefix.APC.REPROALL
//*
//LMO4      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//TEMP      DD  DISP=OLD,
//              DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//          DSN=prefix.APC.CNTL(REPROLMO)
//*
//*****************************************************************
//*    ALT
//*****************************************************************
//ALT1      EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN        DD  DISP=OLD,
```

```
//             DSN=prefix.APC.KSDSALT
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCXCREP)
//*
//ALT2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFALT)
//*
//ALT3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=ALT
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//ALT4     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(REPROALT)
//*
//*******************************************************************
//*    PRO
//*******************************************************************
//PRO1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSPRO
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCXCREP)
//*
//PRO2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFPRO)
//*
//PRO3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=PRO
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//PRO4     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(REPROPRO)
//*
```

```
//*********************************************************************
//*    BPM
//*********************************************************************
//BPM1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSBPM
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCXCREP)
//*
//BPM2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFBPM)
//*
//BPM3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=BPM
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//BPM4     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(REPROBPM)
//*
//*********************************************************************
//*    IMS
//*********************************************************************
//IMS1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSIMS
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN    DD  DISP=SHR,
//             DSN=prefix.APC.CNTL(APCXCREP)
//*
//IMS2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFIMS)
//*
//IMS3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=IMS
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//IMS4     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
```

```
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(REPROIMS)
//*
//*******************************************************************
//*    CIC
//*******************************************************************
//CIC1     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD  SYSOUT=*
//IN       DD  DISP=OLD,
//             DSN=prefix.APC.KSDSCIC
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCXCREP)
//*
//CIC2     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(DEDEFCIC)
//*
//CIC3     EXEC PGM=APCXARCK,COND=(0,NE),PARM=CIC
//STEPLIB  DD  DISP=SHR,
//             DSN=prefix.APC.LOAD
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//*
//CIC4     EXEC PGM=IDCAMS,COND=(0,NE)
//SYSPRINT DD SYSOUT=*
//TEMP     DD  DISP=OLD,
//             DSN=prefix.APC.REPROALL
//SYSIN DD  DISP=SHR,
//          DSN=prefix.APC.CNTL(REPROCIC)
//*
//*******************************************************************
//*    DELETE REPRO FILE
//*******************************************************************
//DEL1     EXEC PGM=IEFBR14,COND=(0,NE)
//TEMPFILE DD DSN=prefix.APC.REPROALL,
//            DISP=(MOD,DELETE),
//            DCB=(LRECL=8189,RECFM=VB,BLKSIZE=8193),
//            SPACE=(CYL,(50,10)),
//            UNIT=SYSDA
```

Defining Parameters

To view or edit the Central Component parameters, select the AQM-APC Parameters option on the AQM-APC Main Menu. The following Parameters Menu will be displayed.

```
APCXPP00 -- AQM-APC --- Parameters Menu ---------------------------------------
Enter an Option ===>

TSO User              U1 Print Job JCL
Global Parameters     G1 Measurement DS processing
Central Component     X1 General Central Component Parameters
                      X2 Scope of Work
                      X3 Standard Programs
                      X4 Standard Procedures
                      X5 Load Module Libraries
                      X6 Job Libraries
                      X7 Procedure Libraries
                      TH Thresholds

APC SERVER            S1 General APC SERVER Parameters
CICS Feature          C1 General CICS Feature Parameters
                      C2 System Control
                      C3 CICS Load Module Libraries
IMS  Feature          I1 General IMS Feature Parameters
                      I2 System Control
                      I3 IMS Load Modulrs Libraries
```

Panel APCXPP00: Parameters Menu

☞ **Note:** All AQM-APC users need update access authority to the parameter data set.

To use the Parameters Menu, type the selection number in the Enter an Option field. The following is a list of the parameter options:

U1 User specific JCL statements to be used for printing reports of all AQM-APC components.

G1 Global measurement data set processing.

X1 General Central Component parameters such as password and measurement specifications.

X2 Central Component scope of work for AQM-APC and InTune .

X3 Standard program names that allow the Central Component to recognize calls of application programs.

X4 Standard procedure names that allow the Central Component to recognize calls of application programs.

X5 Load module library names to be examined by the Central Component.

X6 Job library names to be examined by the Central Component.

TH Procedure libraries to be examined by the Central Component.

Thresholds to be examined by the Central Component

S1 General parameters to be used by the AQM-APC Server, see "Customizing the AQM-APC Server" on page 163.

JCL Statements for Printing

The following panel is displayed when you choose option **U1** on the Parameters Menu:

```
APCXPP01 --- AQM-APC - Global Print JCL -------------------------------------
COMMAND ===>


Enter your user specific JCL statements used in all AQM-APC
features for Print:

//ABC1234X JOB (9999/P999/AB-10),APC,CLASS=A,MSGCLASS=4,NOTIFY=&SYSUID
//*
//PRINT    EXEC PGM=IEBGENER
//SYSIN    DD   DUMMY
//SYSPRINT DD   SYSOUT=*
//SYSUT2   DD   SYSOUT=*
//SYSUT1   DD   *


           Cancel: CAN
           Save  : END OR PF3
```

Panel APCXPP01: Global Print JCL

Some options within the online dialog of AQM-APC components will allow you to print information. Use this Global Print JCL panel to define the job card and JCL statements to be used when routing information to the printer. This print JCL is saved separately for each AQM-APC TSO user.

Global Measurement Data Set Processing

If InTune is used, the following panel is displayed when you choose option **G1** on the Parameters Menu:

```
APCYPP02 -- AQM-APC - Measurement DS Processing ------------------------------
COMMAND ===>



These parameters allow you to determine how the AQM-APC jobs will process
InTune Measurement data sets. The definitions are valid for all AQM-APC
Features. The AQM-APC jobs will recognize the kind of measurement
(Batch,CICS,IMS/DC) will store the data in AQM-APC accordingly.

InTune monitor server name       : BBINTUNE
Measurement data set name prefix : APC.INTUNE.DS               max 26    char
Measurement list ds name prefix  : APC.INTUNE.LIST.DS          max 26    char
Measurement list csv name prefix : APC.INTUNE.LIST.CSV         max 26    char
Print measurements automatically : N        A/O/N  (All/Open alerts/No)
Delete AQM-APC processed meas. ds: A        A/C/N  (All/Closed alerts/No)
Aut.storage of meas. in AQM-APC  : Y        Y/N


           Cancel: CAN
           Save  : END OR PF3
```

Panel APCYPP02: Global Measurement DS Processing

The parameters defined on this panel determine how the AQM-APC jobs will process the InTune measurement data sets.

☞ **Note:** These global parameters are used by the Central Component, CICS Feature, and IMS Feature.

InTune monitor server name

Enter the name of the InTune server

Measurement data set name prefix

Enter up to 26 characters to define the prefix of your InTune measurement data sets.

Measurement list ds name prefix

Enter up to 26 characters to define the prefix of the data set containing the InTune measurement reports.

Measurement list csv name prefix

Enter up to 26 characters to define the prefix of the data set containing the InTune measurement reports in csv-format.

Print measurements automatically

Indicates whether measurement reports should be automatically printed. The following values are valid input:

O Measurement reports of all InTune measurements controlled by AQM-APC will be automatically printed when the alert state is first changed to OPEN.

A All measurement reports will be printed.

N No measurement reports are printed. This is the default

Delete AQM-APC processed meas. ds

Indicates whether or not processed measurement data sets should be automatically deleted. The following values are valid input:

A All InTune measurement data sets will be automatically deleted after successful processing.

C Measurement data sets are deleted only if the alert state has been changed to CLOSED.

N Measurement data sets will not be deleted. However, the measurement data sets will not be processed twice because the last processing date is stored in AQM-APC. When "N" is entered, it is the user's responsibility to delete the data sets. The value of Automatic storage of meas. in AQM-APC must also be "N".

Aut. storage of meas. in AQM-APC

AQM-APC can check every measurement data set having the high level qualifier defined above against the alert file to verify if the measurement was generated by AQM-APC. If not, the history data will not be saved.

Y Saves historical information of measurements not generated by AQM-APC. Please note that all job/job step combinations of measurement data sets having the defined high level qualifier will be stored. If a measurement was not initiated by AQM-APC, then no AQM-APC alert entry will exist but the measurement will be processed.

N The default value is N. If Delete AQM-APC processed meas. DS field = N, then Automatic storage of meas. in AQM-APC must also be N.

General Parameters

The following panel is displayed when you choose option **X1** on the Parameters Menu:

```
APCBPP01 -- AQM-APC Central Component - General Parameters  -------------------
COMMAND ===>

APC Central Component Password   : **********
TOP Scope of most important steps: 10000    0-99999 (0 = no statistical alerts)
Delete Job data if older than    : 13         1-18 months
No. days APC shall collect job
  step stats before doing alerts : 10         0-99 days
Measurement of modified programs : Y          Y/B/N (Y=changed/new,B=brand-new)
                  use TOP Scope : Y          Y/N
MSG level for APC batch jobs     : 1          0-2
Max number of measurements/day   : 0200       0001-1000

Additional parameters for measurement requests for invoking through BATCH:
       SAMPLECNT(10000) TARGSYS(*) MONDSTRKS(300) MONDSSEC(50)

WARNING: There will be no validity check for additional parameters.
Entering an invalid parameter will prevent generation of measurement
requests. This parameter must contain the values for the samplingrate.
More informations are available on the helppanel (F1).

       Cancel: CAN
       Save  : END OR PF3
```

Panel APCBPP01: General Parameters

Fields

Central Component Password:

Enter the 10 character password you received from your product representative. The AQM-APC program modules will only work after you have entered the correct password.

TOP Scope of most important job steps

Enter the number that you want AQM-APC to use when identifying the top resource consuming job steps. This value affects the number of statistical alerts that will be generated. The job steps belonging to the TOP Scope can easily be viewed using Job Step Query Facility.

Within the scope of work defined through inclusions and exclusions of job names and programs, the scope can be further drastically reduced using the TOP Scope. The TOP Scope facility identifies the job steps consuming the greatest resources and limits the measurements to this group.

To define the use of the TOP Scope, there is only one parameter. This parameter is called "TOP Scope of important steps" and may contain a value from 0 - 99999. A value of 0 indicates that no statistical alerts should be generated by AQM-APC. In all other cases, the TOP Scope defines how many important job steps should be statistically observed.

The TOP Scope results will be generated at least twice a day under job step APCBAALM of job APCXJLIB and under job step APCBACAL of job APCBJSMF or optionally after changing the TOP Scope via the online dialog. To figure out the TOP Scope, AQM-APC computes the importance of a job step using the following algorithm:

$$\text{importance} = \log_2(\text{srvu}) + \log_2(\#\text{ of executions per month}) + \log_2(\text{elpsd})$$

Based on the results of this computation, the importance will be computed for each job step of the AQM-APC job file and the top limited number of the most important steps will be flagged. To review the results, simply select the TOP method of the Job Query Facility panel.

☞ **Note**: The importance formula is equivalent to the product of average service units, the number of step executions, and average elapsed time.

The TOP Scope method uses the "importance" formula to select the top resource-consuming job steps up to the limit set in the TOP Scope = nnn parameter. Statistical alerts and measurements will be limited to the members of this group of large consumers. USER alerts and MODC alerts can be subject to the TOP Scope by selecting the "use TOP Scope" option.

Delete job data if older than

Enter the number of months that job step information should be kept. Job step information that is older than this number of months will be deleted by maintenance job APCXJREO.

No. days AQM-APC shall collect job step stats before doing alerts

The parameter is used only during the product start up phase. It defines the number of days that statistics should be collected before AQM-APC gives alerts. This means that the calculation should not give alerts before it has reached the time range from the first execution of job APCBJSMF to the day of first execution plus this number of days. A high value will improve the statistical base for the job steps.

Measurement of modified programs

Enter a value to determine whether AQM-APC should request measurements for new modules or new and modified modules.

Y All modified and new programs should be measured.

N No alerts will be created if a module has changed and load libraries will not be scanned.

B Only brand new programs should be measured. This drastically reduces the AQM-APC load library scan process.

use TOP Scope

If a new or changed program is found, enter a value to indicate whether the TOP Scope processing logic should be used to determine whether a measurement should take place.

Y Measure only the changed or new programs that are executed in job steps belonging to the TOP Scope.

N Measure all changed or new programs regardless of the TOP Scope.

☞ **Note**: The combination of "only brand new programs" and use TOP Scope = "N" is invalid because no statistical average exists for the new programs/job steps.

MSG level for AQM-APC batch jobs:

When executing the AQM-APC batch jobs, different levels of messages can be generated on DD statement APCREP:

MSGlevel	Meaning
0	Only processing results will be presented (i.e. number of records processed etc.)
1	Processing errors will be presented
2	Processing errors and warnings will be presented.

It is recommended that MSGlevel = 0 or 1 be used. Many messages may be generated when using MSGlevel = 2. The default value is "1".

Max number of measurements/day

During installation, you can enter the maximum number of measurement requests that should be placed in the measurement queue. If AQM-APC attempts to generate more than the maximum number of measurements you entered, an appropriate message will be provided in the batch report output file APCREP (step APCBAALM of job APCXJLIB).

Additional Parameters for InTune ADD requests

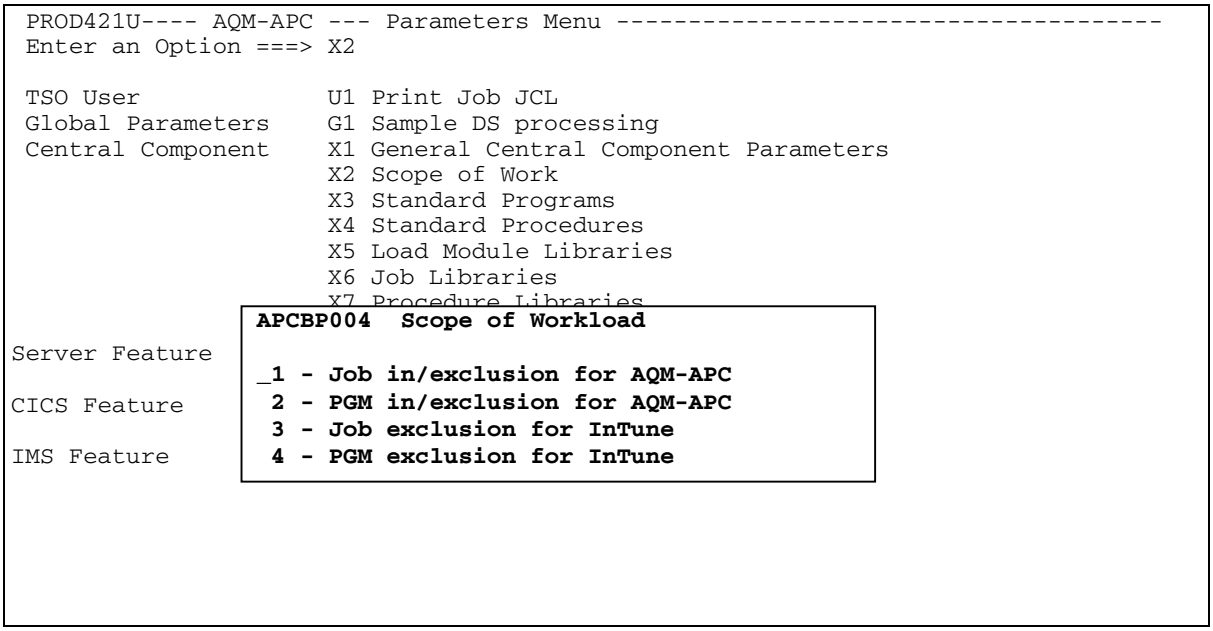
If AQM-APC AQM-APC Server is not used, *InTune* parameters SAMPLES and NOLIMIT are required and are automatically provided by AQM-APC. You can change the value of the SAMPLES parameter.

If used in a parallel SYSPLEX environment, AQM-APC should be run as in a single system environment because *InTune* Version 2 takes care of spreading the measurement requests. In this case, enter *InTune* parameter SYSTEM=*ALL as an additional parameter.

No validity checks are performed on additional ADD parameters. If an invalid parameter exists, the generation of add requests is prevented.

Accessing the Scope of Work Window

When option **X2** on the Parameters Menu is chosen, the following Scope of Workload window is opened.



Panel APCBP004: Scope of Workload Window

On the Scope of Workload window you can select an option to include or exclude jobs and programs. For a detail description regarding the scope of work concept, see section "Reducing the Scope of Work" on page 25.

Using the Window

To use the Scope of Workload Selection Window, type the selection number in the space provided or place the cursor on the selection. Press <ENTER>. The following selections are provided:

1	Jobs to be included or excluded in the AQM-APC Scope of work.
2	Programs to be included or excluded in the AQM-APC Scope of work.
3	Jobs to be excluded from the InTune Scope of work.
4	Programs to be excluded from the InTune Scope of work.

In/Excluding Jobs (AQM-APC Scope)

When option **1** on the Scope of Workload Window is selected, the following panel will be displayed for the inclusion or exclusion of jobs when defining the AQM-APC Scope of work.

```
APCBP041 --- AQM-APC - Job In/Exclusion List (AQM-APC Scope) -  ROW 1 TO 1 OF 1
COMMAND ===>                                                  SCROLL ===> CSR

Commands     :  I -Insert
Line Commands:  I -Insert   D -Delete   C -Change

      If EXCLUDED, the following jobs are NOT in the AQM-APC workload scope.
      If INCLUDED, ONLY the following jobs are in the AQM-APC workload scope.

LC Jobname   IN/EXCLUDED  Description
------------------------------------------------------------------------------
   PR*       INCLUDED     ALL APPLICATION JOBS
****************************** BOTTOM OF DATA *******************************
```

Panel APCBP041: Job In/Exclusion List (AQM-APC Scope)

Use the Job In / Exclusion List panel to define the AQM-APC Scope level 1 for jobs. **All definitions must be either inclusions or exclusions.**

☞ **Note:** Inclusions are recommended when defining the scope of work for job names.

Using the Panel

1. Line commands can be used to work with a specific inclusion / exclusion or to insert a new job. To use line commands, place the cursor in the LC column to the left of the job and enter one of the following:

   I Insert a new job exclusion or inclusion

   D Delete an existing job exclusion or inclusion

   C Change the name or description of an included or excluded job

2. Primary command I (Insert) can also be used to enter a new job inclusion or exclusion.

In/Excluding Programs (AQM-APC Scope)

When option **2** on the Scope of Workload Window is selected, the following panel will be displayed for the inclusion or exclusion of programs when defining the AQM-APC Scope of work.

```
APCBP042  AQM-APC - PGM In/Exclusion List (AQM-APC Scope) --  ROW 1 TO 11 OF 11
COMMAND ===>                                                  SCROLL ===> CSR

Commands     :  I -Insert
Line Commands:  I -Insert   D -Delete   C -Change

   If EXCLUDED, the following programs are NOT in the AQM-APC workload scope.
   If INCLUDED, ONLY the following programs are in the AQM-APC workload scope.

LC PGM name  IN/EXCLUDED  Description
------------------------------------------------------------------------------
   DFH*      EXCLUDED     CICS is handled by the CICS Feature
   DSNUTILB  EXCLUDED
   ICEGENER  EXCLUDED
   IDCAMS    EXCLUDED
   IEB*      EXCLUDED
   IEFBR14   EXCLUDED
   IEWL      EXCLUDED
   IM0*      EXCLUDED
   SAS*      EXCLUDED
   SORT      EXCLUDED
   SYSSORT   EXCLUDED
******************************* BOTTOM OF DATA ********************************
```

Panel APCBP042: PGM In/Exclusion List (AQM-APC Scope)

Use the PGM In/Exclusion List panel to define the AQM-APC scope level 2 for programs. All definitions must be either inclusions **or** exclusions.

☞ **Note:** Exclusions are recommended when defining the scope of work for program names.

Using the Panel

1. Commands can be used to work with a specific program. To use line commands, place the cursor in the LC column to the left of the program and enter one of the following:

   I Insert a new program exclusion or inclusion

   D Delete an existing program exclusion or inclusion

   C Change the status or description of an included or excluded program

2. Primary command **I** (Insert) can also be used to enter a new program inclusion or exclusion.

Excluding Jobs (InTune Scope)

When option **3** on the Scope of Workload Window is selected, the following panel will be displayed for the exclusion of jobs from the measurement tool in use.

```
APCBP043 --- AQM-APC - Job Exclusion (InTune Scope) ---------  ROW 1 TO 2 OF 2
COMMAND ===>                                                  SCROLL ===> CSR

Commands     :  I -Insert
Line Commands:  I -Insert   D -Delete   C -Change

The following Jobs/Jobsteps will GENERALLY NOT be measured by InTune

LC Jobname Stepname Procstep Description
------------------------------------------------------------------------------
    __KV*                    APPLICATION WILL BE REPLACED
    IMSMPP*                  JOB IS STARTED IN BATCH. AQM-APC IMS FEATURE IS USED
****************************** BOTTOM OF DATA ********************************
```

Panel APCBP043: Job Exclusion

Use the Job Exclusion panel to define the following:

1. The job names to be excluded from the InTune Scope.
2. The job names of any IMS regions started from a batch job. IMS regions brought up as Started Tasks (not from batch) need not be listed here. When a new IMS region that is started as a batch job is added to your system, or if the jobname of an existing IMS region started as a batch job is changed, you must update this panel to exclude that jobname. This will ensure the Central Component does not automatically generate measurements for the online region. The IMS Feature is used to handle *InTune* measurements in online IMS regions.

Using the Panel

1. Line commands can be used to work with a specific exclusion or to insert a new job exclusion. To use line commands, place the cursor in the LC column to the left of the job and enter one of the following:

   I Insert a new job exclusion

   D Delete an existing job exclusion

   C Change the status or description of an excluded job

2. Primary command **I** (Insert) can also be used to enter a new job exclusion.

Excluding Programs

When option **4** on the Scope of Workload Window is selected, the following panel will be displayed for exclusion of programs from the measurement tool in use.

```
 APCBP044 --- AQM-APC - PGM Exclusion (InTune Scope) --------  ROW 1 TO 2 OF 2
 COMMAND ===>                                                  SCROLL ===> CSR

 Commands     :  I -Insert
 Line Commands:  I -Insert   D -Delete   C -Change

 The following programs will GENERALLY NOT be measured by InTune.

 LC  PGM name       Description
 ------------------------------------------------------------------------------
     ___X01___      REPRESENT PROGRAMS USED ONE TIME ONLY --> NOT MEASURED
     DFH*           PROGRAM STARTED IN BATCH. CICS FEATURE IS USED FOR THIS
******************************* BOTTOM OF DATA ********************************
```

Panel APCBP044: PGM Exclusion

Use the PGM Exclusion panel to define the following:

1. Program names to be excluded from the InTune Scope.
2. The three digit high level qualifier your site uses for CICS, i.e., DFH*. This is to ensure no CICS online region that was started as a batch job will be automatically included in measurements by the Central Component. The CICS Feature is used to handle measurements in online CICS regions.

Using the Panel

1. Line commands can be used to work with a specific exclusion or to insert a new program exclusion. To use line commands, place the cursor in the LC column to the left of the program and enter one of the following:

   I Insert a new program exclusion

   D Delete an existing program exclusion

   C Change the status or description of an excluded program

2. Primary command **I** (Insert) can also be used to enter a new program exclusion.

Defining Standard Programs

When you choose option **X3** on the Parameters Menu, the following panel will be displayed:

```
APCBPP04 -- AQM-APC Central Component - List Standard Programs - Row 1 to 5 of 5
COMMAND ===>                                                  SCROLL ===> CSR


Commands     : INS Insert   CAN Cancel    END Exit and Save
Line Commands: I - Insert   D - Delete    C - Change

LC Program         Parm No.    DD Name   Parm Name(s)
------------------------------------------------------------------------------
   DFSRRC00        02
   DSNMTV01        09          DDITV02
   IKJEFT01                    SYSTSIN   PGM       PROGRAM
   IKJEFT1A                    SYSTSIN   PGM       PROGRAM
   IKJEFT1B                    SYSTSIN   PGM       PROGRAM
****************************** Bottom of data ********************************
```

Panel APCBPP04: List Standard Programs

In certain cases, in-house written programs are called from standard programs as a kind of subprogram. Often, the name of the module to be executed is passed via parameters or through a DD statement. Using the Standard Programs panel, you enable the Central Component to detect user programs which are executed through a standard program. If one of the user programs has changed or was inserted, an alert entry will be generated. Without the standard program information, the user program call would not be recognized and no entry would be generated.

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. To insert a new standard program definition, use line command **I** or primary command **INS** and enter the program name and other fields as defined below in the Columns section for this panel.

2. To delete a standard program definition in the list, place the cursor in the LC column next to the specific program name and enter line command **D**.

3. To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the program name only if it does not already exist in the list.

Definitions for each standard program are represented by a detail line on the bottom half of the panel. This area of the panel can be scrolled.

The use of this panel is illustrated through the explanation of the following examples:

1. If program DFSRRC00 is called, the name of the program to be executed is in the second position in the parameter list.

   Example: `//STEP1 EXEC PGM=DFSRRC00,PARM=(P1,ABC001,ABCPSB,,,,Y)`

   In the example above, the program DFSRRC00 is called, but AQM-APC recognizes that the application program ABC001 is also called. If this program has been modified (and the parameter "Measurement of modified programs" contains a "Y"), AQM-APC generates a measurement.

2. If program DSNMTV01 is called, the user program is defined as the ninth positional parameter under DD name DDITV02.

3. If program IKJEFT01, IKJEFT1A, or IKJEFT1B is called, the name of the user program will be found in the file under DD name SYSTSIN. Within that file, the user program will be defined by either the keyword PGM or the keyword PROGRAM

Columns

Program

The program name as called in the JCL statement EXEC PGM=.

Parm No.

Positional parameter number containing the application program name as called in the JCL statement EXEC PGM=xxxxxx,PARM=(xx,P01ABC,yy)

or

in a sequential file or library member as defined in the DD name parameter xx,P01ABC,yy

DD name

DD name in the job step where a sequential file or a member in a library contains the application program name.

Parm Name(s)

Define two alternative useable keywords where AQM-APC can search for the application program name in the sequential file or a library member you have defined in the DD name parameter.

PGM=P01ABC or PROGRAM=P01ABC

Defining Standard Procedures

When you choose option **X4** on the Parameters Menu, the following panel will be displayed:

```
APCBPP06 -- AQM-APC Central Component - List Standard Procedures  Row 1 to 5 of 5
COMMAND ===>                                                    SCROLL ===> CSR


Commands     : INS Insert   CAN Cancel    END Exit and Save
Line Commands: I - Insert   D - Delete    C - Change

LC Procname  Procstepname  Parm No.    DD Name   Parm Name(s)
------------------------------------------------------------------------------
   DB2IMS    IMS                                 PRG
   N2        XST                       DD1       PRG       UPRG
   DB2ONLY                   05        SYSTSIN
   N4        NST                                 P2        P4
   RZ$CBK    NST                                 PROGRAM
****************************** Bottom of data ********************************
```

Panel APCBPP06: List Standard Procedures Panel

In many cases programs are called through standard procedures (e.g., standard DB2 procedures). Often, the name of the module to be executed is passed via a parameter. Through the panel for managing standard procedures you enable AQM-APC to detect and measure calls from standard procedures.

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. To insert a new standard procedure definition, use line command **I** or primary command **INS** and enter the Procname and other fields as defined below in the Columns section for this panel.

2. To delete a standard procedure definition in the list, place the cursor in the LC column next to the specific Procname and enter line command **D**.

3. To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the procedure name only if it does not already exist in the list.

Definitions for each standard procedure are represented by a detail line on the bottom half of the panel. This area of the panel can be scrolled. The use of this panel is illustrated through the explanation of the following examples:

1. The DB2IMS entry means if procedure DB2IMS is called within a job step, the program name is in the variable "PRG" and the step name within the procedure is "IMS".

```
//JABC1    JOB
//STEP0001 EXEC PROC=DB2IMS,PRG=PGM9911 or
//STEP0001 EXEC DB2IMS,PRG=PGM9911
```

   If the above mentioned entry for a standard procedure was made and the program PGM9911 was modified, AQM-APC will create a measurement request for job JABC1, step STEP0 001.IMS.

2. If procedure DB2ONLY is called, the name of the program is defined as the fifth parameter within the DD statement SYSTSIN. There is no step name within the procedure.

```
//JABC2    JOB
//STEP1    EXEC DB2ONLY
//SYSTSIN  DD *
 ACDD,SYS,4,TX,ACD1
/*
```

   AQM-APC will recognize that program ACD1 is called and -- if the program was changed or inserted -- generate an alert entry for job JABC2, step STEP1.

Column

Procname

Name of the standard procedure used for calling the application programs in a specific environment, e.g., DB2 or IMS.

Procstepname

Name of the step within the standard procedure that calls the application program.

Parm No.

Positional parameter number containing the application program name as called in the JCL statement EXEC PROC=xxxxxx,PARM=(xx,P01ABC,yy).

DD Name

DD name in the job step where a sequential file member in a library contains the application program name.

Parm Name

Name of a variable used in the standard procedure containing the application program name and provided with the EXEC statement of the call of the standard procedure.

Defining Load Module Libraries

When you choose option **X5** on the Parameters Menu, the following panel is displayed. Use this panel to enter the load module libraries AQM-APC should examine.

```
 APCBPP05 --- AQM-APC Central Component - List Load Libraries - ROW 1 TO 5 OF 5
 COMMAND ===>                                                  SCROLL ===> CSR


 Commands     : INS Insert   CAN Cancel    END Exit and Save
 Line Commands: I - Insert   D - Delete    C - Change

 LC Dataset name
 ------------------------------------------------------------------------------
    XXZ.JOBLIB1
    XXD.DB2.P1.ISPFLOAD
    XXR1.DB2.S1.DSNLOAD
    XXZ.U1.JOBLIB
    XXR1.QMF.S1.DSQLOAD
****************************** BOTTOM OF DATA ********************************
```

Panel APCBPP05: List Load Libraries

If you have not previously entered any load libraries, the insert panel will be displayed and you will be requested to enter the name of the load module library to be examined.

The load libraries defined here are examined in batch to determine whether programs have been modified.

☞ **Note:** If a new load library is defined, AQM-APC detects this automatically and prevents all pre-existing modules in the new load library from being treated as new modules regarding measurement.

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. To insert a new load library and define its size, use line command **I** or primary command **INS** and enter the data set name of the load library.

2. To delete a load library definition in the list, place the cursor in the LC column next to the specific data set name and enter line command **D**. Once deleted, the load library will no longer be searched for program modifications.

3. To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the load library name only if it does not already exist in the list.

Defining Job Libraries

When you choose option **X6** on the Parameters Menu, the following panel will be displayed. Use this panel to enter job libraries to be examined by AQM-APC.

```
APCBPP05 --- AQM-APC Central Component - List Job Libraries -- ROW 1 TO 2 OF 2
COMMAND ===>                                                  SCROLL ===> CSR


Commands     : INS Insert   CAN Cancel    END Exit
Line Commands: I - Insert   D - Delete    C - Change

LC Dataset name
------------------------------------------------------------------------------
   XXZ.P01.OPCA.JOBDATEI
   XXZ.U01.OPCA.JOBDATEI
****************************** BOTTOM OF DATA ********************************
```

Panel APCBPP05: List Job Libraries

If you have not entered any job libraries, the insert panel will be displayed and you will be requested to enter the name of the job library to be examined.

The job libraries defined here are examined in batch to determine which application program is called in which job step.

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. To insert a new job library, use line command **I** or primary command **INS** and enter the data set name of the job library.

2. To delete a job library definition in the list, place the cursor in the LC column next to the specific data set name and enter line command **D**. Once deleted, the job library will no longer be searched for program modifications.

3. To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the job library name only if it does not already exist in the list.

Defining Procedure Libraries

When you choose option **X7** on the Parameters Menu, the following panel is displayed. Use this panel to enter procedure libraries to be examined by AQM-APC.

```
APCBPP07 -- AQM-APC Central Component - List Procedure Libraries  ROW 1 TO 6 OF 6
COMMAND ===>                                                    SCROLL ===> CSR


Commands     : INS Insert   CAN Cancel    END Exit and Save
Line Commands: I - Insert   D - Delete    C - Change

   Concatenation  Data Set Name of
LC     Number     Procedure Libraries
------------------------------------------------------------------------------
       0          XXZ.S01.PROCLIB
       1          XXD.PROCLIB
       2          XXS.PROCLIB
       3          XXZ.PROCLIB
       4          XXZ.TPROCLIB
       5          XXZ.U01.PROCLIB
******************************* BOTTOM OF DATA ********************************
```

Panel APCBPP07: List Procedure Libraries

You can enter the name of your procedure library or libraries here. During AQM-APC's JCL scan, the libraries are concatenated. As a user, you can determine the concatenation order by entering the concatenation sequence number when inserting the name of a new procedure library.

If no entries have been made, Central Component will not recognize program calls within procedures (except program calls within standard procedures). In this case, the Central Component will immediately display the insert panel when signing on to General Parameters - Procedure Libraries.

Using the Panel

1. To add new procedure libraries, use line command **I** or primary command **INS** and enter the procedure library name and concatenation number. You can add up to 100 libraries.

2. The line command **D** can be used to delete entered line commands from the procedure library overview. Once deleted, the procedure library will no longer be searched for program modifications.

3. To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the procedure library name only if it does not already exist in the list.

Columns

Concatenation Number

The concatenation sequence number determines the concatenation order of the procedure libraries.

Data Set Name of Procedure Libraries

The data set name of the procedure library.

Defining Thresholds

When you choose option **TH** on the Parameters Menu, the following panel is displayed. Use this panel to enter procedure libraries to be examined by AQM-APC.

```
APCBPP08 -- APC Central Component - List Threshold Values ---- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR


Commands     : INS Insert   CAN Cancel    END Exit and Save
Line Commands: I - Insert   D - Delete    C - Change

LC Jobname      Elapsed  CPU Time  EXCPs    SRVU
------------------------------------------------------------------------------
   PR*          030      010       0010000  0005000
******************************* Bottom of data ********************************
```

Panel APCBPP08: List Threshold Values

Thresholds are used by Central Component to determine which InTune monitor datasets are important. If the top scope parameter is used, e.g., greater than 0, thresholds defined here will only be used when an alert is issued by a user.

The Central Component allows you enter separate threshold consumption values for session time, CPU time, and EXCPs per job or group of jobs. Thresholds for each job or job group are represented by a detail line on the bottom half of the panel. This area of the panel can be scrolled. The jobs or job group definitions have effect only on the *InTune S*cope of work.

For details regarding the scope of work concept, see section "Reducing the Scope of Work" on page 25.

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. To insert a new application detail line, use line command **I** or primary command **INS**. A panel is displayed on which you can enter the job name and the threshold values. Generic notation is allowed when defining job names.

2. To delete a detail line of threshold definitions for a job name, place the cursor in the LC column next to the specific job name and enter line command **D**.

To change job name or thresholds values of an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. A panel is displayed on which you can change the job name and thresholds. The job name can be changed only if it does not already exist on the list.

Columns

Jobname

The Jobname column contains the name of the job name for which thresholds are defined. Generic notation is allowed by using wildcards _ and *. An underscore '_' is a **one** character place holder. An asterisk '*' is a place holder for **one or more** characters at the end of a name.

☞ **Note:** One generic entry ***** is required (you will see this entry in the first line of the panel). If no generic entry is found, APCYJNAR will generate an error message on DD statement APCREP and discontinue execution.

Elapsed

The elapsed column contains theelapsed time threshold in minutes.

CPU Time

The CPU Time column contains the CPU time threshold in minutes.

EXCPs

The EXCPs column contains the EXCP threshold.

SRVU

The SRVU column contains the service units threshold.

Note: If more than one threshold entry applies to one job, *AQM-APC* takes the entry with highest hit ratio.

Chapter 3. Customizing the CICS Feature

This chapter provides an overview of the CICS Feature and details how to customize the REXX procedure, batch jobs, and parameters to be used.

Overview

The following flowchart illustrates how the CICS Feature works:

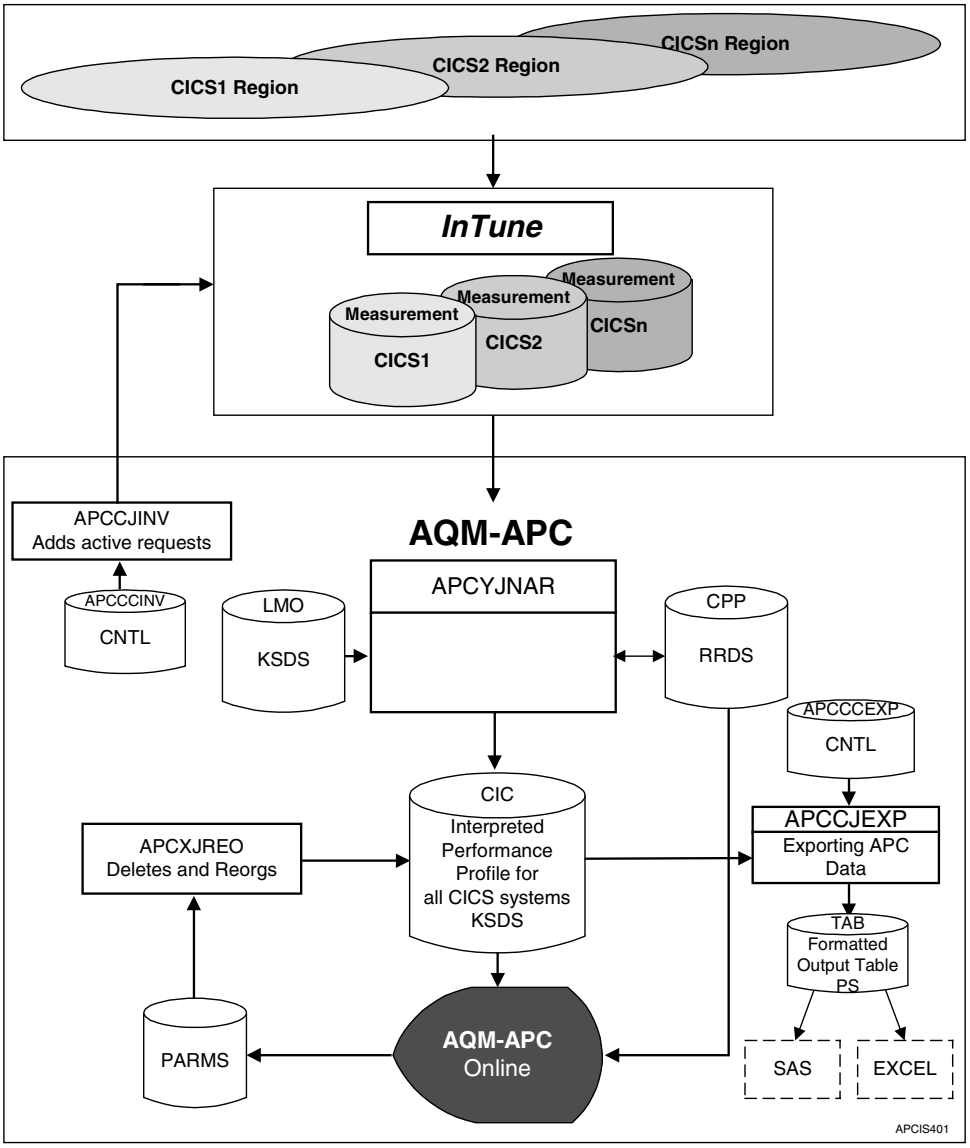


Figure 10: How the CICS Feature Works

How the CICS Feature System Control Works

The following flowchart illustrates how the System Control of the CICS Feature works:

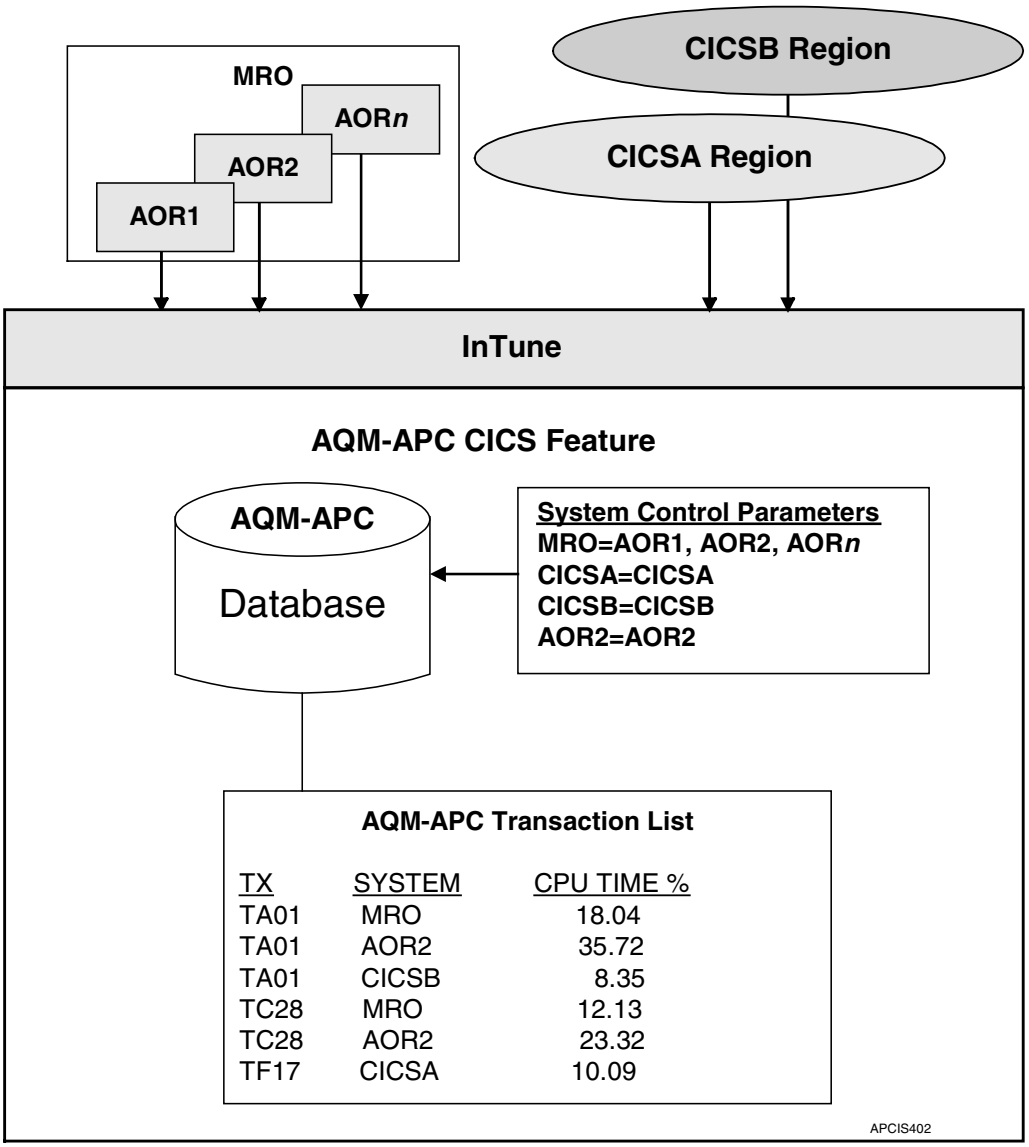


Figure 11: How System Control Works

Alert Management

In CICS there are hundreds of transactions but not all of these transactions need performance monitoring. Many transactions, even though they may be high consumers, only execute occasionally and do not warrant concern.

Each time the CICS Feature executes, important top consuming transactions can be automatically identified and alerted. This works in two steps:

1. The top number of consuming transactions are identified based on the scope you define as a parameter, e.g., TOP Scope = 10.
2. Within this TOP Scope, the current execution consumption values of the transactions are compared to the statistical information maintained for the same transactions on the AQM-APC database. If the actual consumption exceeds the statistical limits, an alert is automatically issued -- referred to as a statistical alert.

Additionally, the AQM-APC user can manually issue an alert explicitly for transactions using the online Alert Management option -- referred to as a user alert.

AQM-APC alert management option provides all the information necessary to handle the alert. Information is provided in the form of state and reason codes that identify the situation. For details on how to review and interpret alerts online, refer to the *AQM-APC User's Guide* that corresponds with your measurement tool.

All alerted transactions are also listed in the APCSALT report file of job APCYJNAR (for details regarding this job, see "Jobs APCYJSUB and APCYJNAR - Process *Intune*" on page 55. Listed for each alert transaction is the average of CPU time in percent, the current CPU time in percent, the number of relevant history entries of the current transaction, and the resulting standard deviation in CPU time in percent. Using the APCSALT report file, user written REXX procedures can use the key word parameters to process the alert information, e.g., pass information to change management or provide programmer notification of alerts. The following is an example of the APCSALT report file output:

```
$$ALERT
$SS=CICS                                SUBSYSTEM ( CICS / IMS )
$SN=PNP1                                SYSTEM NAME
$TX=OKSS                                TRANSACTION NAME
$CM=00627                               MEASURED CPU TIME %
$CA=00022                               AVERAGE CPU TIME %
$AT=005                                 ALERT TEXT WITH NNN LINES
2002-09-09 AQM-APC ALERT ID 16187    BY STAT
           ------------------------------------------------------------
           TRANSACTION : OKSS       SYSTEM : PNP1       PGM : CIC1PNP1
           CPU%  MEAS  :   6.27   AVERAGE :    .22   STD.DEV :    .24
           ------------------------------------------------------------
$$ALEND
```

How the TOP Limit Works

In order to use the Alert Management option of the CICS Feature, the TOP Limit of work must be defined. TOP Limit processing works for each defined CICS system (see "CICS Feature System Control" on page 122) and is the last step in the total system handling. To define the TOP Limit, use the parameter called "TOP Limit of most important transactions". The TOP Limit field can contain a value from 0 to 999. A value of 0 deactivates the TOP Limit, thus deactivating Alert Management. Otherwise, the TOP Limit number defines how many important transactions are to be statistically observed. To define this parameter, see "General Parameters" on page 120.

Within the TOP Limit -- meaning the number defined as a parameter -- all transactions of the current system will be statistically observed and, at the end, a runaway test check is performed. The statistical limits are based on up to eighteen months of stored interpreted measurements. To determine the TOP consumer and issue alerts, one of two conditions normally exists:

- Transaction consumption is static. A standard deviation check is done and if the result indicates an increase in the consumption (runaway), an alert is issued.
- Transaction consumption is not static. A standard deviation check is done and if the result indicates a drastic increase in the consumption (runaway), an alert is issued.

If there is a runaway situation, the transaction will be added to the AQM-APC alert file with the state OPEN and the reason STAT. Alerts can be viewed under the Alert Management dialog.

☞ **Note:** The range of the statistical observation is limited to one year. For a transaction to be alerted, it must have been observed in at least three separate measurements collected during the period of statistical observation.

Using the API Procedure APCDRXX

APCDRXX is a procedure that can be invoked by using line command **X** on any overview panel of the CICS Feature. Through site-specific customization of this procedure, the user can:

- Pass AQM-APC data to other products, e.g., data dictionaries.
- Call user written procedures.

The following is an illustration of this REXX procedure:

```
/*  REXX */
X = MSG('OFF')
   ADDRESS ISPEXEC
        "VGET (APCXXTYP) SHARED"
   IF APCXXTYP = 'TRAN' THEN DO
      "VGET (APCXXTRA APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'TRAN:'APCXXTRA'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'MOD' THEN DO
      "VGET (APCXXMOD APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'MODUL:'APCXXMOD'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'DBRM' THEN DO
      "VGET (APCXXDBR APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'DBRM:'APCXXDBR'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'PSB' THEN DO
      "VGET (APCXXPSB APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'PSB:'APCXXPSB'  SYSTEM:'APCXXSYS
   END
/*********************************/
/*REESTABLISH APC/ISPF LIBRARIES */
/*********************************/
        "VGET ZSCREEN SHARED"
        "LIBDEF ISPPLIB LIBRARY ID(APCPLIB"ZSCREEN")"
        "LIBDEF ISPMLIB LIBRARY ID(APCMLIB"ZSCREEN")"
***************************** Bottom of Data ****************************
```

Figure 12: REXX Procedure APCDRXX

The following panels can be modified to use line command X:

- Transaction Information - Panels APCDP001
- General Module Information - Panel APCDP002
- DBRM - Panel APCDP003
- PSB - Panel APCDP004
- Alert List - Panel APCDP007

Batch Jobs

When running in an *InTune* environment, the CICS Feature is divided into two parts:

1. Job APCCJINV calls *InTune* in order to activate one or more CICS measurements.

2. Job APCDJALM searches for changed online modules.

3. Jobs APCYJSUB and APCYJNAR create and interpret the measurement and generate the records that are to be used in the ISPF overviews.

The JCL illustrated in this chapter should be customized by replacing lower case italicized items with values that suit the needs of your environment. All JCL can be found in your AQM-APC product CNTL library.

The use of a job scheduling system to run the jobs on a regular basis is strongly recommended.

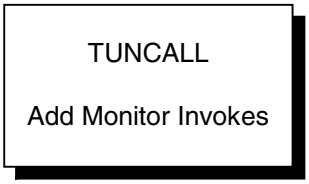
☞ **Note:** All steps are fully **restart**able.

Activating the Measurement Request - APCCJINV

The first part of the CICS Feature batch process is job APCCJINV. Job APCCJINV should be run during peak time to activate a measurement request for one or more CICS regions. The measurements should be done regularly, e.g., daily, twice a week, weekly, etc., and always at the same time of day. Otherwise, there is a high possibility that the measurements are not comparable.

APCCJINV consists of one *InTune* program.

APCCJINV is the *InTune* call for Add Monitor Invoks(s).



Adding Active Requests - TUNCALL

The InTune program in step CICSINVK inserts the Monitor Invoke requests into the *InTune* queue.

JCL for Job APCCJINV

```
//JOBCARD...
//*
//*
//*
//*********************************************************************
//*                                                                   *
//* AQM-APC: APCCJINV                                                 *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//* ACTION:      CALL INTUNE FOR MEASUREMENT REQUESTS                 *
//*                                                                   *
//* FUNCTION:    DAILY MEASUREMENT OF CICS REGIONS                    *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002
//*********************************************************************
//*
//*********************************************************************
//* CANCEL OF WAITING MONITORS BEFORE DOING NEW ALERTS FOR
//*********************************************************************
//*
//APCTOK1  EXEC PGM=IKJEFT01,DYNAMNBR=30,PARM='APCXRIDE'
//STEPLIB  DD DISP=SHR,DSN=SGSP.STROBE.STROBLIB
//SYSPRINT DD SYSOUT=*
//TUNPRINT DD SYSOUT=*
//APCPARM  DD DISP=SHR,DSN=prefix.APC.PARMS
//DELREQ   DD DISP=OLD,DSN=prefix.CICRQ
//SYSEXEC  DD DISP=SHR,DSN=prefix.APC.EXEC
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD DUMMY
//*
//*
//*********************************************************************
//* INVOKE MONITOR REQUESTS FOR IMS
//*********************************************************************
//IMSINVK EXEC PGM=TUNCALL
//STEPLIB  DD DISP=SHR,
//            DSN=SGSP.STROBE.STROBLIB
//TUNPRINT DD DSN=&&TUNLOG,
//            DISP=(,PASS),
//            UNIT=SYSDA,
//            DCB=(DSORG=PS,LRECL=133,RECFM=FB),
//            SPACE=(CYL,(1,2))
//SYSPRINT DD SYSOUT=*
//TUNIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCCCINV)
//*
//*********************************************************************
```

```
//* SAVE TUNPRINT OUTPUT
//*********************************************************************
//SAVETUNP EXEC PGM=IEBGENER
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  DSN=*.IMSINVK.TUNPRINT,DISP=(OLD,PASS,KEEP)
//SYSUT2   DD  SYSOUT=*
//SYSIN    DD  DUMMY
//*
//*********************************************************************
//* SCAN INVOKE OUTPUT TO GET TOKEN FOR CANCEL OF WAITING MONITORS
//* BEFORE DOING NEW INVOKES FOR
//*********************************************************************
//*
//APCTOK2  EXEC PGM=IKJEFT01,DYNAMNBR=30,PARM='APCXRTOK'
//SYSTSIN  DD DUMMY
//SYSPRINT DD SYSOUT=*
//TUNPRINT DD DSN=&&TUNLOG,DISP=(OLD,DELETE)
//DELREQ   DD DISP=OLD,DSN=prefix.CICRQ
//SYSEXEC  DD DISP=SHR,DSN=prefix.APC.EXEC
//SYSTSPRT DD SYSOUT=*
```

The SYSIN input for job APCCJINV is member APCCCADD in the AQM-APC product library. The entries within this member must be defined for each CICS region to be measured. The following table defines each of these entries.

Table 7: APCCCINV Member Entries

APCCCINV Entry	What you should enter
Monitorname MONITOR INVOKE	Enter the Monitorname of your InTune StartetTask.
JOBNAME(cics-regionname)	Enter the active CICS region to be measured.
ELAPSTIME(seconds)	Enter the session duration in seconds. One hours (3600 seconds) or more is recommended. When measuring less than one hour, there is a chance that the measurement is influenced by a long running transaction, e.g., a background transaction.
SAMPLECNT(20000)	Enter the target sample size. It is strongly recommended that users aim to get approximately 10000 execution samples in order to receive a measurement with a minimal CPU margin of error. Therefore, if the CICS region normally has appr. 50% CPU, the target sample size should be 20000, if the normal CPU usage is about 20%, the target sample size should be 50000, etc.
MONDSN('your-APC-monitordsn-prefix.&JOBNAME.&SYSTIME	Enter the prefix for the measurement data set. This prefix must match with the prefix defined on the Global Sample DS Processing panel. On this panel, you define the measurement data set prefix for all AQM-APC features (batch, CICS, IMS/DC). For details on defining global parameters, see on page 85. Job APCYJSUB uses this parameter to inspect measurements and to decide which measurements belong to the AQM-APC feature.

Example: Member APCCCINV might contain the following entries for CICS region CIC1HHHH:

```
BBINTUNE MONITOR INVOKE -
JOBNAME(CIC1HHHH) -
ELAPSTIME(03600) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.&JOBNAME.&SYSTIME')
```

Figure 13: Example of APCCCINV Entries to Measure a Region

Check the CPU usage of the MVS image to avoid potential problems.

☞ **Note:** CICS regions should be measured during peak time in order to get the best results.

Example: The following example illustrates how APCCCINV entries may be defined to measure multiple regions:

```
BBINTUNE MONITOR INVOKE -
JOBNAME(CIC1REG1) -
ELAPSTIME(07200) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.CICS.&JOBNAME.&SYSTIME')
BBINTUNE MONITOR INVOKE -
JOBNAME(CIC1REG2) -
ELAPSTIME(10800) -
SAMPLECNT(10000) -
MONDSN('APC.INTUNE.DS.CICS.&JOBNAME.&SYSTIME')
BBINTUNE MONITOR INVOKE -
JOBNAME(CIC1REG3) -
ELAPSTIME(03600) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.CICS.&JOBNAME.&SYSTIME')
```

Figure 14: Example of APCCCINV Entries to Measure Multiple Regions

Activating the online changed module option - APCDJAM

A second part of the CICS Feature is searching for changed online modules. If you want to measure changed online modules you have to plan these job on a regular base. It is recommented to do this before the onlineprocess starts.

JCL for Job APCDJAM

```
//JOBNAME…
//*********************************************************************
//* APCDJALM:   SEARCH FOR CHANGED ONLINE-MODULES                     *
//* =========                                                         *
//*                                                                   *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//*
//*********************************************************************
//* SEARCH LOAD LIBS (LLX & LLC) CICS
//*********************************************************************
//APCXALM3 EXEC PGM=APCCALMO,REGION=8M
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSCMO,
//            DISP=SHR
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCREP   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*********************************************************************
//* SEARCH LOAD LIBS (LLG & LLI) IMS
//*********************************************************************
//APCXALM4 EXEC PGM=APCIALMO,REGION=8M
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSIMO,
//            DISP=SHR
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCREP   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*********************************************************************
//* ACTION:      ALERT MANAGEMENT UNDER LOAD MODULE CHANGING          *
//* FUNCTION:    DAILY MANAGEMENT OF ONLINE LOAD MODULE FILE          *
//*              TO CREATE NEW ALERTS ON MODULE CHANGING              *
//* CICS                                                              *
//*********************************************************************
//APCDAAL1 EXEC  PGM=APCDAALM
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
```

```
//APCCHLMO DD DSN=NULLFILE,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSCMO,
//            DISP=SHR
//APCBALT1 DD DSN=Prefix.APC.KSDSALT,
//            DISP=SHR
//APCBEXC1 DD DSN=Prefix.APC.KSDSEXC,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*******************************************************************
//* ACTION:      ALERT MANAGEMENT UNDER LOAD MODULE CHANGING         *
//* FUNCTION:    DAILY MANAGEMENT OF ONLINE LOAD MODULE FILE         *
//*              TO CREATE NEW ALERTS ON MODULE CHANGING             *
//* IMS                                                              *
//*******************************************************************
//APCDAAL2 EXEC  PGM=APCDAALM
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCCHLMO DD DSN=NULLFILE,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSIMO,
//            DISP=SHR
//APCBALT1 DD DSN=Prefix.APC.KSDSALT,
//            DISP=SHR
//APCBEXC1 DD DSN=Prefix.APC.KSDSEXC,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
```

Creating and Interpreting the Measurements - APCYJSUB and APCYJNAR

A second part of the CICS Feature batch process is jobs APCYJSUB and APCYJNAR. These jobs create and interpret the *InTune* Performance Measurements. These jobs are part of the Central Component. In order to process all CICS measurements in one execution of APCYJNAR, member APCCCINV, which names all CICS regions, is interpreted by job APCYJSUB as well. For details on how to customize and use these jobs, refer to "Jobs APCYJSUB and APCYJNAR - Process *Intune*" on page 55.

☞ **Note**: Job APCYJSUB should be run after all CICS measurements have finished.

Deleting Performance Measurement History - APCXJREO

Job APCXJREO performs two functions:

- Deletes the old measurements.
- Reorganizes the KSDS file of the CICS Feature.

For detailed information about job APCXJREO, see "Job APCXJREO - Maintenance and Reorganization" on page 71.

Defining Parameters

To view or edit the CICS Feature parameters, select the PARAMETERS option on the AQM-APC Main Menu. The following AQM-APC Parameters Menu will be displayed.

```
APCXPP00 - AQM-APC --- Parameters Menu ---------------------------------------
 Enter an Option =➔

 TSO User              U1 Print Job JCL
 Global Parameters     G1 Measurement DS processing
 Central Component     X1 General Central Component Parameters
                       X2 Scope of Work
                       X3 Standard Programs
                       X4 Standard Procedures
                       X5 Load Module Libraries
                       X6 Job Libraries
                       X7 Procedure Libraries
                       TH Thresholds

 APC SERVER            S1 General APC SERVER Parameters
 CICS Feature          C1 General CICS Feature Parameters
                       C2 System Control
                       C3 CICS Load Module Libraries
 IMS  Feature          I1 General IMS Feature Parameters
                       I2 System Control
                       I3 IMS Load Module Libraries
```

Panel APCXPP00: Parameters Menu - Defining CICS Feature Parameters

☞ **Note:** All AQM-APC users need update access authority to the parameter data set.

To use the Parameters Menu, type the selection number in the Enter an Option field. The following is a list of the parameter options:

C1 Define general parameters, e.g., password, TOP Limit, thresholds, to be used by the CICS Feature.

C2 Define the system control parameters for the CICS Feature

C3 Define the CICS load module libraries

General Parameters

The General Parameters panel is displayed when option **C1** on the PARAMETERS selection window is chosen.

```
APCDPP01 --- AQM-APC CICS Feature - General Parameters ----------------------
COMMAND ===>


CICS Feature password            : **********

TOP Limit of most important trans: 020        0-999 (0=TOP mngmnt out of use)

Threshold value for module statm.: 00.02      00.01-99.99 % CPU Time
Threshold value for SQL    statm.: 00.02      00.01-99.99 % CPU Time
Threshold value for DLI    statm.: 00.02      00.01-99.99 % CPU Time
Threshold value for lib. subrout.: 00.02      00.01-99.99 % CPU Time

Delete stored measurements in
the AQM-APC Measurement Pool after   : 2          1-9 executions of the AQM-APC
                                                Interpret Measurements Job
Delete info data if older than   : 13         01-18 months



           Cancel: CAN
           Save  : END OR PF3
```

Panel APCDPP01: CICS Feature General Parameters

Use the General Parameters panel to view or edit parameters that control the report information maintained by the CICS Feature.

Fields

CICS Feature Password

Enter the 10 character password provided by your product representative. The modules will only work after you have entered the correct password.

TOP Limit for most important transactions

Enter the number that you want AQM-APC to use when identifying the top most consuming transactions. For example, if you enter 25, the batch TOP Limit processing will determine the top 25 consuming transactions. A number from 1 to 999 is valid. If this field is blank, top consuming transactions will NOT be identified.

If the TOP Limit parameter is greater than 0 **and** transactions are found that exceed the statistical limits based on the AQM-APC database, an alert will be generated. Use the Alert Management option of the Main Menu to view alerts. If the TOP Limit parameter is 0, alert management is deactivated.

Threshold value for:

Enter the threshold percentage of CPU time from which you would like AQM-APC to save information. If a module statement (or a 64 byte part (standard resolution)), SQL statement, DLI statement or library subroutine exceeds this percentage of CPU time, the information will be kept, if not the information will be ignored by AQM-APC.

Delete stored measurements in the AQM-APC Measurement Pool after:

Enter the number of times the AQM-APC Interpret Measurements Job should execute and process the measurements of CICS regions before deleting them from the AQM-APC Measurement Pool. A number from 1 to 9 is valid. The AQM-APC Measurement Pool is a wrap around file -- meaning older measurement reports are dropped off as new ones are added. All measurement reports of at least one execution are stored in the AQM-APC Measurement Pool Cluster.

Delete if older than:

Enter the number of months you would like to keep the information available. AQM-APC saves a lot of information, thus allowing users to compare performance of transactions, modules, DB2 statements, etc., over a period of time. However, be aware that the longer the information is kept, the bigger the AQM-APC measurement pool cluster becomes. For details about the job that maintains this file, see "Job APCXJREO - Maintenance and Reorganization" on page 71.

CICS Feature System Control

The System Control panel is displayed when option **2** on the PARAMETERS selection window is chosen.

```
APCDPP02 --- AQM-APC CICS Feature - System Control ---------  ROW 1 TO 8 OF 8
COMMAND ===>                                                  SCROLL ===> CSR

Commands     : CAN - CANcel
Line Commands: I - Insert   D - Delete   C - Change System name

LC AQM-APC       AQM-APC       Jobname    Start time HH
   internal ID   System name                from to
-------------------------------------------------------------------------------
   1             PAP1          CIC1PAP1     00   24
   2             PCK1          CIC1PCK1     00   24
   3             PGP1          CIC1PGP1     00   24
   4             PNP1          CIC1PNP1     00   24
   5             PPZ3          CIC1PPZ3     00   24
   6             PCC2          CIC1PCC2     00   24
   7             PVH1          CIC1PVH1     00   24
   8             PVH2          CIC1PVH2     00   24
****************************** BOTTOM OF DATA********************************
```

Panel APCDPP02: CICS Feature System Control

The System Control panel shows you the default processing results of job APCYJNAR. APCYJNAR adds a new entry in this list for every new job name of a CICS region that is processed. By default, each new entry is added with a new distinct AQM-APC internal ID and the job name is used as the AQM-APC system name.

The following functions can be performed using the System Control panel:

1. The default system name can be changed to a user defined system name. The AQM-APC system name (whether user defined or default) should be used on other panels to filter the measurement data being accessed.

2. New entries may be inserted to allow AQM-APC to aggregate CICS measurements. All entries must have the same user defined AQM-APC internal ID and the same user defined AQM-APC system name. The job names must be the real job names of the CICS start up jobs.

   With the CICS Feature, information about measurements can be aggregated to information for a whole online system. To illustrate this, assume the following:

ID	System Name	Jobname	Start time from/to
8	MRO	AOR1CICS	00 24
8	MRO	AOR2CICS	00 24
8	MRO	AOR3CICS	00 24

Using the illustration above as an example, all measurements of CICS regions AOR1CICS, AOR2CICS, and AOR3CICS will be interpreted and calculated by AQM-APC to one logical system MRO. In the online dialog, the data of the measurements is seen as one although a transaction is called in all 3 regions. Thus, AQM-APC aggregates the data of three measurements. For controlling transaction performance, look in the online dialog for the specific transaction in system MRO as one line of information.

3. To have multiple measurements a day for one CICS, you can define an entry for each measurement and determine the time range of the start of the measurement. Use different values than from 00 to 24 only if you plan to measure a CICS region more than once a day. If you measure one CICS in the morning and again in the afternoon, job APCYJNAR will know which measurements belong to which AQM-APC system by interpreting start time information. For example:

ID	System Name	Job name	Start time from/to
28	CIC1MORN	JOBCIC1	00 12
29	CIC1LATE	JOBCIC1	12 24

For an illustration of how System Control works, see Figure 11 on page 102.

Note: Change the parameter or the schedule plan for job APCCJINV accordingly.

Line Commands

To work with the system information entries that are displayed in the list, place the cursor to the left of the entry and enter one of the following line commands:

I Insert a new user defined system entry representing a CICS region measurement.

C Change the system name of an existing system entry.

D Delete a system entry.

Columns

AQM-APC Internal ID

The AQM-APC internal key. Every distinct internal ID corresponds to a distinct AQM-APC system name. Valid values are from 0 to 255.

AQM-APC System name

The name of one CICS region or an aggregate of measurements of CICS regions. The default system name consists of the job name. This field may be user defined. The maximum length of this field is 8 bytes.

Jobname

The real job name of the start up job of a specific CICS.

Start time HH from to

Start time range of measurements defined by "from time hours" and "to time hours". Valid hours are from 00 to 24.

CICS Load Module Libraries

When you choose option **C3** on the Parameters Menu, the following panel is displayed. Use this panel to enter the load module libraries AQM-APC should examine.

```
 APCBPP05 --- AQM-APC CICS Feature - List Load Libraries ------ ROW 1 TO 2 OF 2
 COMMAND ===>                                                  SCROLL ===> CSR


 Commands     : INS Insert   CAN Cancel    END Exit and Save
 Line Commands: I - Insert   D - Delete    C - Change

 LC Dataset name
 ------------------------------------------------------------------------------
    XXZ.CICS.LOAD1
    ABC.CICS.LOAD2
****************************** BOTTOM OF DATA *******************************
```

Panel APCBPP05: List Load Libraries

If you have not previously entered any load libraries, the insert panel will be displayed and you will be requested to enter the name of the load module library to be examined.

The load libraries defined here are examined in batch to determine whether programs have been modified.

☞ **Note:** If a new load library is defined, AQM-APC detects this automatically and prevents all pre-existing modules in the new load library from being treated as new modules regarding measurement.

Using the Panel

Both primary commands and line commands are allowed on this panel.

4. To insert a new load library and define its size, use line command **I** or primary command **INS** and enter the data set name of the load library.

5. To delete a load library definition in the list, place the cursor in the LC column next to the specific data set name and enter line command **D**. Once deleted, the load library will no longer be searched for program modifications.

To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the load library name only if it does not already exist in the list.

Defining Thresholds For CICS Module Alert Handling

To reduce the effort for controlling and processing open alerts you can define a limit for consumption values (thresholds) a module should consume to become important for you. This function reflects your opinion of not important consumption informations in the way to mark the alert entries with consumption values below the thresholds automatically with state **CTHR** (Closed by THResholds). So you can concentrate work on the OPEN alerts.

You can define thresholds for:

Module counts

CPU Consumption (Percent)

To define thresholds you must insert in your APC.PARMS dataset a line with the thresholdparameter TO **as described in the following example:**

```
TO000100000150
```

```
TOccccccccPPPP
!     !     !
TO    !     !  : Parameter-Identifier
      !     !
->cccccccc  !  : Module-Counts, 8-digit (how often called during measurement)
            !
---------->PPPP : Module-CPU-consumption in Percent, 4-digit (during measurement)
                 i. E. 0150 = 01.50 percent / 9999 = 99.99 percent
```

Figure TO-Parameter: structure of parameter TO

NOTE: The Thresholds are valid for all types of online modules. If the parameter is not defined in the paramaterfile then zero is used for each threshold as default.

If one of the consumption values is equal to or exceeds the belonging threshold value (OR-condition) then the **state of** an existing pending **Alert is changed from PEND to OPEN**.

If no defined threshold is reached by any of the belonging measurement consumption values then the *state of* ***an existing pending*** *Alert is changed from PEND to CTHR* ***(Closed by THResholds).***

Chapter 4. Customizing the IMS Feature

This chapter provides an overview of the IMS Feature and details how to customize the REXX procedure, batch jobs, and parameters to be used.

Overview

The following flowchart illustrates how the IMS Feature works:

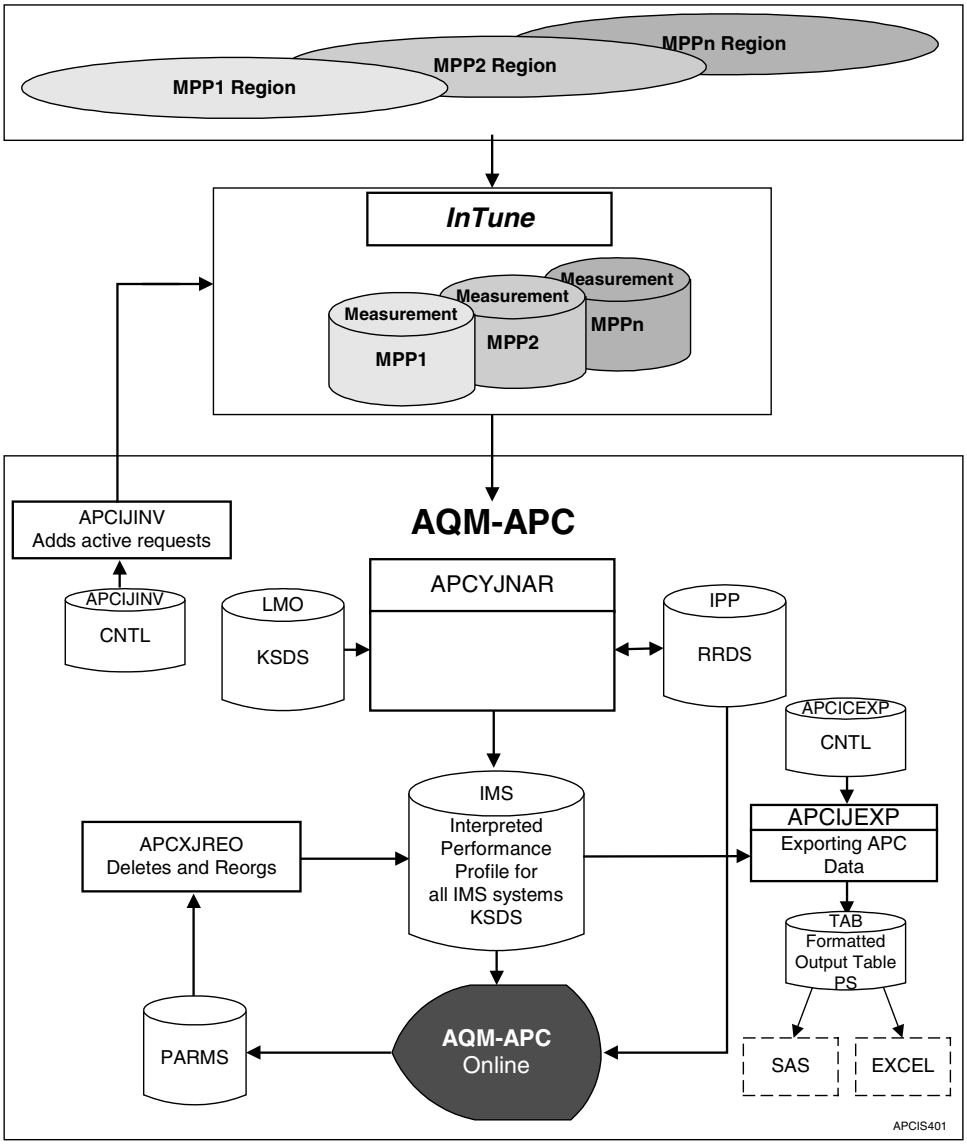


Figure 15: How the IMS Feature Works

How the IMS Feature System Control Works

The following figure illustrates how the System Control of the IMS Feature works:

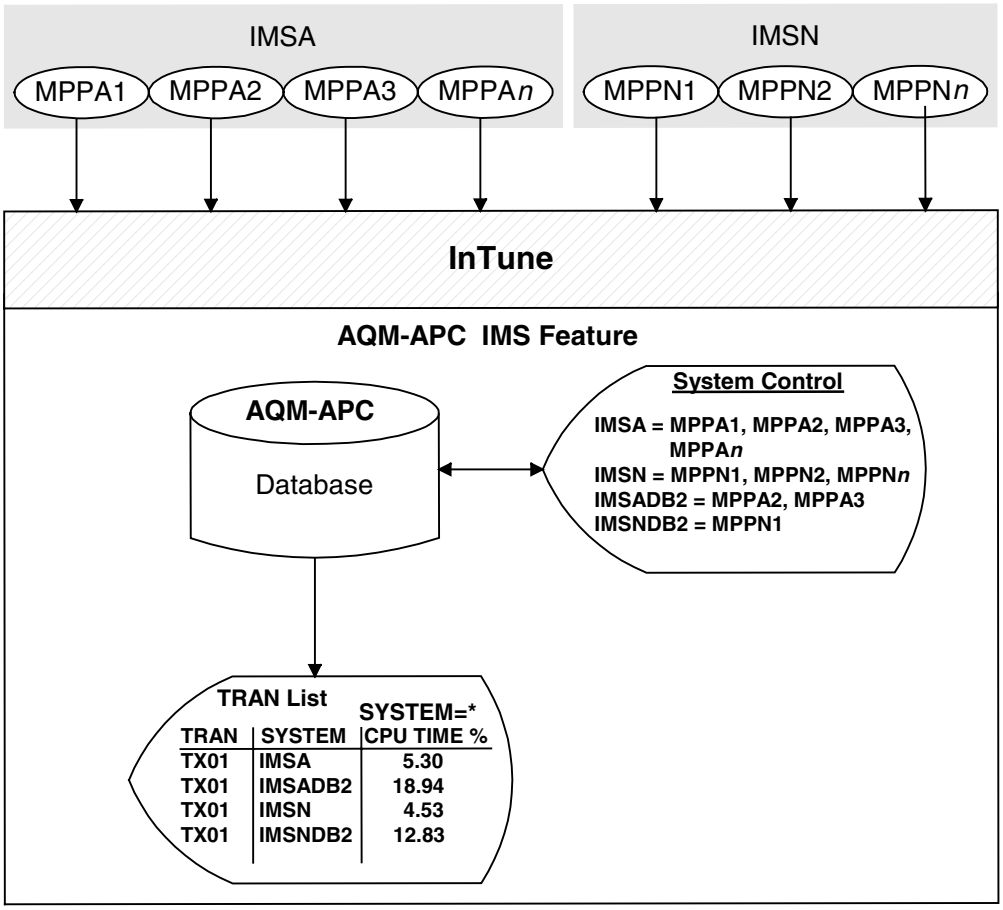


Figure 16: How System Control Works for the IMS Feature

Alert Management

In IMS there are hundreds of transactions but not all of these transactions need performance monitoring. Many transactions, even though they may be high consumers, only execute periodically and do not warrant concern.

Each time the IMS Feature executes, important top consuming transactions can be automatically identified and alerted. This works in two steps:

1. The top number of consuming transactions are identified based on the scope you define as a parameter, e.g., TOP Limit = 10.
2. Within this TOP Limit, the current execution consumption values of the transactions are compared to the statistical information maintained for the same transactions on the AQM-APC database. If the actual consumption exceeds the statistical limits, an alert is automatically issued -- referred to as a statistical alert.

Additionally, the AQM-APC user can manually issue alerts explicitly for transactions using the online Alert Management option -- referred to as user alerts.

AQM-APC alert management option provides all the information necessary to handle the alert. Information is provided in the form of state and reason codes that identify the situation. For details on how to review alerts online, refer to the *AQM-APC User's Guide* that corresponds with your measurement tool.

All alerted transactions are also listed in the APCSALT report file of job APCYJNAR (for details regarding this job, see "Jobs APCYJSUB and APCYJNAR - Process *Intune*" on page 55). Listed for each alert transaction is the average of CPU time in percent, the current CPU time in percent, the number of relevant history entries of the current transaction, and the resulting standard deviation in CPU time percent. Using the APCSALT report file, user written REXX procedures can use the key word parameters to process the alert information, e.g., pass information to change management or provide programmer notification of alerts. Following is an example of the APCSALT report file output:

```
$$ALERT
$SS=IMS                                SUBSYSTEM ( CICS / IMS )
$SN=IMS123                             SYSTEM NAME
$TX=OZN31000                           TRANSACTION NAME
$CM=00339                              MEASURED CPU TIME %
$CA=00052                              AVERAGE CPU TIME %
$AT=005                                ALERT TEXT WITH NNN LINES
2002-09-09 AQM-APC ALERT ID 16193    BY STAT
           ------------------------------------------------------------
           TRANSACTION : OZN31000   SYSTEM : IMS123     PGM : IMSPR001
           CPU%  MEAS  :   3.39   AVERAGE :    .52   STD.DEV :    .72
           ------------------------------------------------------------
$$ALEND
```

How the TOP Limit Works

In order to use the Alert Management option of the IMS Feature, the TOP Limit of work must be defined. TOP Limit processing works for each defined IMS system (see "System Control") and is the last step in the total system handling. To define the TOP Limit, use the parameter called "TOP Limit of most important transactions". The TOP Limit field can contain a value from 0 to 999. A value of 0 deactivates the TOP Limit, thus deactivating Alert Management. Otherwise, the TOP Limit number defines how many important transactions are to be statistically observed. To define this parameter, see "General Parameters" on page 144.

Within the TOP Limit -- meaning the number defined as a parameter -- all transactions of the current system will be statistically observed and, at the end, a runaway test check is performed. The statistical limits are based on up to eighteen months of stored interpreted measurements. To determine the top consumer and issue alerts, one of two conditions normally exist:

- Transaction consumption is static. A standard deviation check is done and if the result indicates an increase in the consumption (runaway), an alert is issued.
- Transaction consumption is not static. A standard deviation check is done and if the result indicates a drastic increase in the consumption (runaway), an alert is issued.

If there is a runaway situation, the transaction will be added to the AQM-APC alert file with the state OPEN and the reason STAT. Alerts can be viewed under the Alert Management dialog.

☞ **Note:** The range of the statistical observation is limited to one year. There must be at least three occurrences of the transaction during the observation period.

Using the API Procedure APCDRXX

APCDRXX is a procedure that can be invoked by using line command **X** on any overview panel of the IMS Feature. Through site-specific customization of this procedure, the user can:

- Pass AQM-APC data to other products, e.g., data dictionaries.
- Call user written procedures. The following is an illustration of this REXX procedure:

```
/*  REXX */
X = MSG('OFF')
   ADDRESS ISPEXEC
        "VGET (APCXXTYP) SHARED"
   IF APCXXTYP = 'TRAN' THEN DO
      "VGET (APCXXTRA APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'TRAN:'APCXXTRA'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'MOD' THEN DO
      "VGET (APCXXMOD APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'MODUL:'APCXXMOD'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'DBRM' THEN DO
      "VGET (APCXXDBR APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'DBRM:'APCXXDBR'  SYSTEM:'APCXXSYS
   END
   IF APCXXTYP = 'PSB' THEN DO
      "VGET (APCXXPSB APCXXSYS) SHARED"
       SAY 'API FOR APC. CUSTOMIZE YOUR APC.EXEC(APCDRXX) PROCEDURE.'
       SAY 'PSB:'APCXXPSB'  SYSTEM:'APCXXSYS
   END
/*********************************/
/*REESTABLISH APC/ISPF LIBRARIES */
/*********************************/
        "VGET ZSCREEN SHARED"
        "LIBDEF ISPPLIB LIBRARY ID(APCPLIB"ZSCREEN")"
        "LIBDEF ISPMLIB LIBRARY ID(APCMLIB"ZSCREEN")"
***************************** Bottom of Data ****************************
```

Figure 17: REXX Procedure APCDRXX

The following panels can be modified to use line command X:

- Transaction Information - Panels APCIP001 and APCDP001
- General Module Information - Panel APCDP002
- DBRM - Panel APCDP003
- PSB - Panel APCDP004
- Alert List - Panel APCDP007

Batch Jobs

When running in a *InTune* environment, the IMS Feature is divided into two parts:

1. Job APCIJINV calls *InTune* in order to activate one or more IMS measurements.

2. Job APCDJALM searches for changed online modules.

3. Jobs APCYJSUB and APCYJNAR create and interpret the measurements and generate the records that are to be used in the ISPF overviews.

The JCL illustrated in this chapter should be customized by replacing lower case italicized items with values that suit the needs of your environment. All JCL can be found in your AQM-APC product CNTL library.

The use of a job scheduling system to run the jobs on a regular basis is strongly recommended.

☞ **Note:** All steps are fully **restart**able.

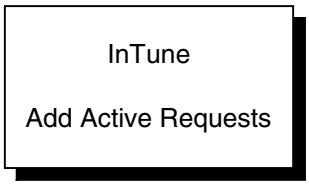
Activating the InTune Measurement Request - APCIJINV

The first part of the IMS Feature batch process is job APCIJINV. Job APCIJINV should be run during peak time to activate a *InTune* measurement request for one or more IMS regions. The measurements should be done regularly, e.g., daily, twice a week, weekly, etc., and always at the same time of day. Otherwise, there is a high possibility that the measurements are not comparable.

APCIJINV consists of one *InTune* program. .

APCIJINV is the *InTune* call for Monitor Involks(s).

APCIJINV cancel of waiting monitors before doing new alerts



Adding Active Requests

The *InTune* program in step CICSINVK inserts the measurement requests into the *InTune* queue.

Cancling Waiting Requests

The step APCTOK1 cancel of waiting monitors in the InTunequeue before doing new alerts

JCL for Job APCIJINV

```
//JOBCARD...
//*
//*
//*
//*********************************************************************
//*                                                                   *
//* AQM-APC: APCIJINV                                                 *
//*                                                                   *
//* MAINTENANCE: APM TEAM                                             *
//*                                                                   *
//* ACTION:      CALL INTUNE FOR MEASUREMENT REQUESTS                 *
//*                                                                   *
//* FUNCTION:    DAILY MEASUREMENT OF IMS REGIONS                     *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002
//*********************************************************************
//*
//*********************************************************************
//* CANCEL OF WAITING MONITORS BEFORE DOING NEW ALERTS FOR
//*********************************************************************
//*
//APCTOK1  EXEC PGM=IKJEFT01,DYNAMNBR=30,PARM='APCXRIDE'
//STEPLIB  DD DISP=SHR,DSN=SGSP.STROBE.STROBLIB
//SYSPRINT DD SYSOUT=*
//TUNPRINT DD SYSOUT=*
//APCPARM  DD DISP=SHR,DSN=prefix.APC.PARMS
//DELREQ   DD DISP=OLD,DSN=prefix.IMSRQ
//SYSEXEC  DD DISP=SHR,DSN=prefix.APC.EXEC
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD DUMMY
//*
//*
//*********************************************************************
//* INVOKE MONITOR REQUESTS FOR IMS
//*********************************************************************
//IMSINVK EXEC PGM=TUNCALL
//STEPLIB  DD DISP=SHR,
//            DSN=SGSP.STROBE.STROBLIB
//TUNPRINT DD DSN=&&TUNLOG,
//            DISP=(,PASS),
//            UNIT=SYSDA,
//            DCB=(DSORG=PS,LRECL=133,RECFM=FB),
//            SPACE=(CYL,(1,2))
//SYSPRINT DD SYSOUT=*
//TUNIN DD DISP=SHR,
//         DSN=prefix.APC.CNTL(APCCCINV)
//*
//*********************************************************************
//* SAVE TUNPRINT OUTPUT
//*********************************************************************
//SAVETUNP EXEC PGM=IEBGENER
//SYSPRINT DD  SYSOUT=*
```

```
//SYSUT1   DD  DSN=*.IMSINVK.TUNPRINT,DISP=(OLD,PASS,KEEP)
//SYSUT2   DD  SYSOUT=*
//SYSIN    DD  DUMMY
//*
//*******************************************************************
//* SCAN INVOKE OUTPUT TO GET TOKEN FOR CANCEL OF WAITING MONITORS
//* BEFORE DOING NEW INVOKES FOR
//*******************************************************************
//*
//APCTOK2  EXEC PGM=IKJEFT01,DYNAMNBR=30,PARM='APCXRTOK'
//SYSTSIN  DD DUMMY
//SYSPRINT DD SYSOUT=*
//TUNPRINT DD DSN=&&TUNLOG,DISP=(OLD,DELETE)
//DELREQ   DD DISP=OLD,DSN=prefix.CICRQ
//SYSEXEC  DD DISP=SHR,DSN=prefix.APC.EXEC
//SYSTSPRT DD SYSOUT=*
```

The SYSIN input for job APCIJINV is member APCICINV in the AQM-APC product library. The entries within this member must be defined for each IMS MPP region to be measured. The following table defines each of these entries.

Table 8: APCICINV Member Entries

APCICINV Entry	What you should enter
Monitorname MONITOR INVOKE	Enter the Monitorname of your InTune Startet Task.
JOBNAME(ims-regionname)	Enter the active IMS region to be measured.
ELAPSTIME(seconds)	Enter the session duration in seconds. One hours (3600 seconds) or more is recommended. When measuring less than one hour, there is a chance that the measurement is influenced by a long running transaction, e.g., a background transaction.
SAMPLECNT(20000)	Enter the target sample size. It is strongly recommended that users aim to get approximately 10000 execution samples in order to receive a measurement with a minimal CPU margin of error. Therefore, if the CICS region normally has appr. 50% CPU, the target sample size should be 20000, if the normal CPU usage is about 20%, the target sample size should be 50000, etc.
MONDSN('your-APC-monitordsn-prefix.&JOBNAME.&SYSTIME	Enter the prefix for the measurement data set. This prefix must match with the prefix defined on the Global Sample DS Processing panel. On this panel, you define the measurement data set prefix for all AQM-APC features (batch, CICS, IMS/DC). For details on defining global parameters, see on page 85. Job APCYJSUB uses this parameter to inspect measurements and to decide which measurements belong to the AQM-APC feature.

Example: Member APCICINV might contain the following entries for IMS region IMS1HHHH:

```
BBINTUNE MONITOR INVOKE -
JOBNAME(IMS1HHHH) -
ELAPSTIME(03600) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.&JOBNAME.&SYSTIME')
```

Figure 18: Example of APCICINV Entries to Measure a Region

Users can measure multiple IMS region at the same time. Check the CPU usage of the MVS image to avoid potential problems.

☞ **Note:** IMS regions should be measured during peak time in order to get the best results.

Example: The following example illustrates how APCICINV entries may be defined to measure multiple regions:

```
BBINTUNE MONITOR INVOKE -
JOBNAME(IMS1REG1) -
ELAPSTIME(07200) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.IMS.&JOBNAME.&SYSTIME')
BBINTUNE MONITOR INVOKE -
JOBNAME(IMS1REG2) -
ELAPSTIME(10800) -
SAMPLECNT(10000) -
MONDSN('APC.INTUNE.DS.IMS.&JOBNAME.&SYSTIME')
BBINTUNE MONITOR INVOKE -
JOBNAME(IMS1REG3) -
ELAPSTIME(03600) -
SAMPLECNT(20000) -
MONDSN('APC.INTUNE.DS.IMS.&JOBNAME.&SYSTIME')
```

Figure 19: Example of APCICINV Entries to Measure Multiple Regions

Activating the online changed module option - APCDJAM

A second part of the CICS Feature is searching for changed online modules. If you want to measure changed online modules you have to plan these job on a regular base. It is recommented to do this before the onlineprocess starts.

JCL for Job APCDJAM

```
//JOBNAME…
//*******************************************************************
//* APCDJALM:   SEARCH FOR CHANGED ONLINE-MODULES                   *
//* =========                                                       *
//*                                                                 *
//*                                                                 *
//*-----------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                        *
//*******************************************************************
//*
//*
//*******************************************************************
//* SEARCH LOAD LIBS (LLX & LLC) CICS
//*******************************************************************
//APCXALM3 EXEC PGM=APCCALMO,REGION=8M
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSCMO,
//            DISP=SHR
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCREP   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*******************************************************************
//* SEARCH LOAD LIBS (LLG & LLI) IMS
//*******************************************************************
//APCXALM4 EXEC PGM=APCIALMO,REGION=8M
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSIMO,
//            DISP=SHR
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCREP   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*******************************************************************
//* ACTION:      ALERT MANAGEMENT UNDER LOAD MODULE CHANGING         *
//* FUNCTION:    DAILY MANAGEMENT OF ONLINE LOAD MODULE FILE         *
//*              TO CREATE NEW ALERTS ON MODULE CHANGING             *
//* CICS                                                            *
//*******************************************************************
//APCDAAL1 EXEC  PGM=APCDAALM
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
```

```
//APCCHLMO DD DSN=NULLFILE,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSCMO,
//            DISP=SHR
//APCBALT1 DD DSN=Prefix.APC.KSDSALT,
//            DISP=SHR
//APCBEXC1 DD DSN=Prefix.APC.KSDSEXC,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
//*
//*********************************************************************
//* ACTION:      ALERT MANAGEMENT UNDER LOAD MODULE CHANGING          *
//* FUNCTION:    DAILY MANAGEMENT OF ONLINE LOAD MODULE FILE          *
//*              TO CREATE NEW ALERTS ON MODULE CHANGING              *
//* IMS                                                               *
//*********************************************************************
//APCDAAL2 EXEC  PGM=APCDAALM
//STEPLIB  DD DSN=Prefix.APC.LOAD,
//            DISP=SHR
//SYSUDUMP DD SYSOUT=*
//APCPARAM DD DSN=Prefix.APC.PARMS,
//            DISP=SHR
//APCCHLMO DD DSN=NULLFILE,
//            DISP=SHR
//APCBLMO1 DD DSN=Prefix.APC.KSDSIMO,
//            DISP=SHR
//APCBALT1 DD DSN=Prefix.APC.KSDSALT,
//            DISP=SHR
//APCBEXC1 DD DSN=Prefix.APC.KSDSEXC,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
//APCJLOG1 DD DSN=Prefix.APC.LOG,
//            DISP=MOD
```

Creating and Interpreting the Measurements - APCYJSUB and APCYJNAR

A second part of the IMSFeature batch process is jobs APCYJSUB and APCYJNAR. These jobs create and interpret the measurements. These jobs are part of the Central Component. In order to process all IMS measurements in one execution of APCYJNAR, the member APCICINV, which names all IMS regions, is interpreted by job APCYJSUB as well. For details on how to customize and use these jobs, refer to "Jobs APCYJSUB and APCYJNAR - Process *Intune*" on page 55.

☞ **Note**: Job APCYJSUB should be run after all IMS measurements have finished.

Deleting Performance Measurement History - APCXJREO

Job APCXJREO performs two functions:

- Deletes the old measurements.
- Reorganizes the KSDS file of the IMS Feature.

For detailed information about job APCXJREO, see "Job APCXJREO - Maintenance and Reorganization" on page 71.

Defining Parameters

To view or edit the IMS Feature parameters, select the PARAMETERS option on the AQM-APC Main Menu. The following AQM-APC Parameters Menu will be displayed.

```
APCXPP00 - AQM-APC --- Parameters Menu ------------------------------------
 Enter an Option =➔

 TSO User              U1 Print Job JCL
 Global Parameters     G1 Measurement DS processing
 Central Component     X1 General Central Component Parameters
                       X2 Scope of Work
                       X3 Standard Programs
                       X4 Standard Procedures
                       X5 Load Module Libraries
                       X6 Job Libraries
                       X7 Procedure Libraries
                       TH Thresholds

 APC SERVER            S1 General APC SERVER Parameters
 CICS Feature          C1 General CICS Feature Parameters
                       C2 System Control
                       C3 CICS Load Module Libraries
 IMS  Feature          I1 General IMS Feature Parameters
                       I2 System Control
                       I3 IMS Load Module Libraries
```

Panel APCXPP00: Parameters Menu - Defining IMS Feature Parameters

☞ **Note:** All AQM-APC users need update access authority to the parameter data set.

To use the Parameters Menu, type the selection number in the Enter an Option field. The following is a list of the parameter options:

I1 Define general parameters, e.g., password, TOP Limit, thresholds, to be used by the IMS Feature.

I2 Define the system control parameters for the IMS Feature

I3 Define the IMS load module libraies

General Parameters

The General Parameters panel is displayed when option **1** on the PARAMETERS selection window is chosen.

```
APCDPP01 --- AQM-APC IMS Feature - General Parameters ------------------------
COMMAND ===>

 IMS  Feature password            : **********

 TOP Limit of most important trans: 123        0-999 (0=TOP mngmnt out of use)

 Threshold value for module statm.: 00.02      00.01-99.99 % CPU Time
 Threshold value for SQL    statm.: 00.02      00.01-99.99 % CPU Time
 Threshold value for DLI    statm.: 00.02      00.01-99.99 % CPU Time
 Threshold value for lib. subrout.: 00.02      00.01-99.99 % CPU Time

 Delete stored measurements in
 the AQM-APC Measurement Pool after   : 2          1-9 executions of the AQM-APC
                                                 Interpret Measurements Job
 Delete info data if older than   : 06         01-18 months



           Cancel: CAN
           Save  : END OR PF3
```

Panel APCDPP01: IMS Feature General Parameters

Use the General Parameters panel to view or edit parameters that control the report information maintained by the IMS Feature.

Fields

IMS Feature Password

Enter the 10 character password provided by your product representative. The modules will only work after you have entered the correct password.

TOP Limit for most important transactions

Enter the number that you want AQM-APC to use when identifying the top most consuming transactions. For example, if you enter 25, the batch TOP Limit processing will determine the top 25 consuming transactions. A number from 1 to 999 is valid. If this field is blank, top consuming transactions will NOT be identified.

If the TOP Limit parameter is greater than 0 **and** transactions are found that exceed the statistical limits based on the AQM-APC database, an alert will be generated. Use the Alert Management option of the Main Menu to view alerts. If the TOP Limit parameter is 0, alert management is deactivated.

Threshold value for:

Enter the threshold percentage of CPU time from which you would like AQM-APC to save information. If a module statement (or a 64 byte part (standard resolution)), SQL statement, DLI statement or library subroutine exceeds this percentage of CPU time, the information will be kept, if not the information will be ignored by AQM-APC.

Delete stored measurements in the AQM-APC Measurement Pool after:

Enter the number of times the AQM-APC Interpret Measurements Job should execute and process the measurements of IMS regions before deleting them from the AQM-APC Measurement Pool. A number from 1 to 9 is valid. The AQM-APC Measurement Pool is a wrap around file -- meaning older measurement reports are dropped off as new ones are added. All measurement reports of at least one execution are stored in the AQM-APC Measurement Pool Cluster.

Delete if older than:

Enter the number of months you would like to keep the information available. AQM-APC saves a lot of information, thus allowing users to compare performance of transactions, modules, DB2 statements, etc., over a period of time. However, be aware that the longer the information is kept, the bigger the AQM-APC measurement pool cluster becomes. For details about the job that maintains this file, see "Job APCXJREO - Maintenance and Reorganization" on page 71.

IMS Feature System Control

The System Control panel is displayed when option **2** on the PARAMETERS selection window is chosen.

```
APCDPP02 --- AQM-APC IMS Feature - System Control --------  ROW 24 TO 38 OF 45
COMMAND ===>                                                  SCROLL ===> PAGE

Commands     : CAN - CANcel
Line Commands: I - Insert   D - Delete   C - Change System name

LC AQM-APC       AQM-APC       Jobname    Start time HH
   internal ID   System name                 from to
-------------------------------------------------------------------------------
   000           IMS           IMSPR046     00   24
   000           IMS           IMSPR047     00   24
   000           IMS           IMSPR052     00   24
   000           IMS           IMSPR056     00   24
   000           IMS           IMSPR057     00   24
   000           IMS           IMSPR058     00   24
   000           IMS           IMSPR061     00   24
   000           IMS           PRKE118U     00   24
   001           FORDLI        IMSPR001     00   24
   001           FORDLI        IMSPR007     00   24
   001           FORDLI        IMSPR014     00   24
   002           BACKDLI       IMSPR005     00   24
   003           TOP           IMSPR032     00   24
   003           TOP           IMSPR046     00   24
   003           TOP           IMSPR047     00   24
```

Panel APCDPP02: IMS Feature System Control

The System Control panel shows you the default processing results of job APCYJNAR. APCYJNAR adds a new entry in this list for every new job name of an IMS region that is processed. By default, each new entry is added with a new distinct AQM-APC internal ID and the job name is used as the AQM-APC system name.

The following functions can be performed using the System Control panel:

1. The default system name can be changed to a user defined system name. The AQM-APC system name (whether user defined or default) should be used on other panels to filter the measurement data being accessed.

2. New entries may be inserted to allow AQM-APC to aggregate IMS measurements. All entries must have the same user defined AQM-APC internal ID and the same user defined AQM-APC system name. The jobnames must be the real jobnames of the IMS start up jobs.

   With the IMS Feature, information about measurements can be aggregated to information for a whole online system. To illustrate this, assume the following:

ID	System Name	Jobname	Start time from/to
8	IMS01	IMSMPP1	00 24
8	IMS01	IMSMPP2	00 24
8	IMS01	IMSMPP3	00 24

Using the illustration above as an example, all measurements of IMS regions IMSMPP1, IMSMPP2, and IMSMPP3 will be interpreted and calculated by AQM-APC to one logical system IMS01. In the online dialog of AQM-APC, the data of the measurements is seen as one although a transaction is called in all 3 regions. Thus, AQM-APC aggregates the data of three measurements. For controlling transaction performance, look at the AQM-APC online panels for the specific transaction in system MRO as one line of information.

3. To have multiple measurements a day for one IMS, you can define an entry for each measurement and determine the time range of the start of the measurement. Use different values than from 00 to 24 only if you plan to measure an IMS region more than once a day. If you measure one IMS in the morning and again in the afternoon, job APCYJNAR will know which measurements belong to which AQM-APC system by interpreting start time information. For example:

ID	System Name	Job name	Start time from/to
28	IMSMORN	IMSMPP07	00 12
29	IMSLATE	IMSMPP07	12 24

For an illustration of how System Control works, see Figure 11 on page 102.

Note: Change the parameter or the schedule plan for job APCIJINV accordingly.

Line Commands

To work with the system information entries that are displayed among the list, place the cursor to the left of the entry and enter one of the following line commands:

I Insert a new user defined system entry representing an IMS region measurement.

C Change the system name of an existing system entry.

D Delete a system entry.

Columns

AQM-APC Internal ID

The AQM-APC internal key. Every distinct internal ID corresponds to a distinct AQM-APC system name. Valid values are from 0 to 255.

AQM-APC System name

The name of one IMS region or an aggregate of measurements of IMS regions. The default system name consists of the job name. This field may be user defined. The maximum length of this field is 8 bytes.

Jobname

The real job name of the start up job of a specific IMS, MPP.

Start time HH from to

Start time range of measurements defined by "from time hours" and "to time hours". Valid hours are from 00 to 24.

IMS Load Module Libraries

When you choose option I**3** on the Parameters Menu, the following panel is displayed. Use this panel to enter the load module libraries AQM-APC should examine.

```
 APCBPP05 --- AQM-APC IMS Feature - List Load Libraries ------ ROW 1 TO 2 OF 2
 COMMAND ===>                                                  SCROLL ===> CSR


 Commands     : INS Insert   CAN Cancel    END Exit and Save
 Line Commands: I - Insert   D - Delete    C - Change

 LC Dataset name
 ------------------------------------------------------------------------------
    XXZ.IMS.LOAD1
    ABC.IMS.LOAD2
****************************** BOTTOM OF DATA ********************************
```

Panel APCBPP05: List Load Libraries

If you have not previously entered any load libraries, the insert panel will be displayed and you will be requested to enter the name of the load module library to be examined.

The load libraries defined here are examined in batch to determine whether programs have been modified.

☞ **Note:** If a new load library is defined, AQM-APC detects this automatically and prevents all pre-existing modules in the new load library from being treated as new modules regarding measurement.

Using the Panel

Both primary commands and line commands are allowed on this panel.

6. To insert a new load library and define its size, use line command **I** or primary command **INS** and enter the data set name of the load library.

7. To delete a load library definition in the list, place the cursor in the LC column next to the specific data set name and enter line command **D**. Once deleted, the load library will no longer be searched for program modifications.

To change an existing detail line, place the cursor in the LC column next to the specific job name and enter line command **C**. You can change the load library name only if it does not already exist in the list.

Defining Thresholds For IMS Module Alert Handling

To reduce the effort for controlling and processing open alerts you can define a limit for consumption values (thresholds) a module should consume to become important for you. This function reflects your opinion of not important consumption informations in the way to mark the alert entries with consumption values below the thresholds automatically with state **CTHR** (Closed by THResholds). So you can concentrate work on the OPEN alerts.

You can define thresholds for:

Module counts

CPU Consumption (Percent)

To define thresholds you must insert in your APC.PARMS dataset a line with the thresholdparameter TO **as described in the following example:**

```
TO000100000150
```

```
TOccccccccPPPP
!     !     !
TO    !     !  : Parameter-Identifier
      !     !
->cccccccc  !  : Module-Counts, 8-digit (how often called during measurement)
            !
---------->PPPP : Module-CPU-consumption in Percent, 4-digit (during measurement)
                 i. E. 0150 = 01.50 percent / 9999 = 99.99 percent
```

Figure TO-Parameter: structure of parameter TO

NOTE: The Thresholds are valid for all types of online modules. If the parameter is not defined in the paramaterfile then zero is used for each threshold as default.

If one of the consumption values is equal to or exceeds the belonging threshold value (OR-condition) then the **state of** an existing pending **Alert is changed from PEND to OPEN**.

If no defined threshold is reached by any of the belonging measurement consumption values then the *state of* ***an existing pending*** *Alert is changed from PEND to CTHR* ***(Closed by THResholds).***

Chapter 5. Using AQM-APC Server

The Server component of AQM-APC is a batch monitor that will monitor job steps and automatically generate measurement requests on an as needed basis. By hooking onto the official user exits of JES and SMF, it knows all job steps being executed.

The AQM-APC Server is an optional component. If you want to use the AQM-APC Server, please contact your product distributor.

Functional Overview

The background part of the performance control environment collects information supplied by SMF and RMF. That means SMF and RMF must be installed and active to collect performance control data. There must be, like SMF and RMF, a permanently active Server in the system, which acts upon the recorded events monitored by SMF and RMF. The Server can filter out the events of interest (e.g., started jobs, steps, programs) and initiate some specific action, for example, inserting an measurement request to the Measurement Queue when a job exceeds its limits. The jobs, steps, and programs of interest are held in the AQM-APC database in the form of 'alerts'. This alert database can be reviewed and maintained using the AQM-APC online dialog under TSO/ISPF.

The jobs, steps, and programs in the system to be initiated are detected by the AQM-APC Server using the SMF installation exits. The AQM-APC specific user-exits are designed in such a way that they can co-exist with already existing exits of an installation.

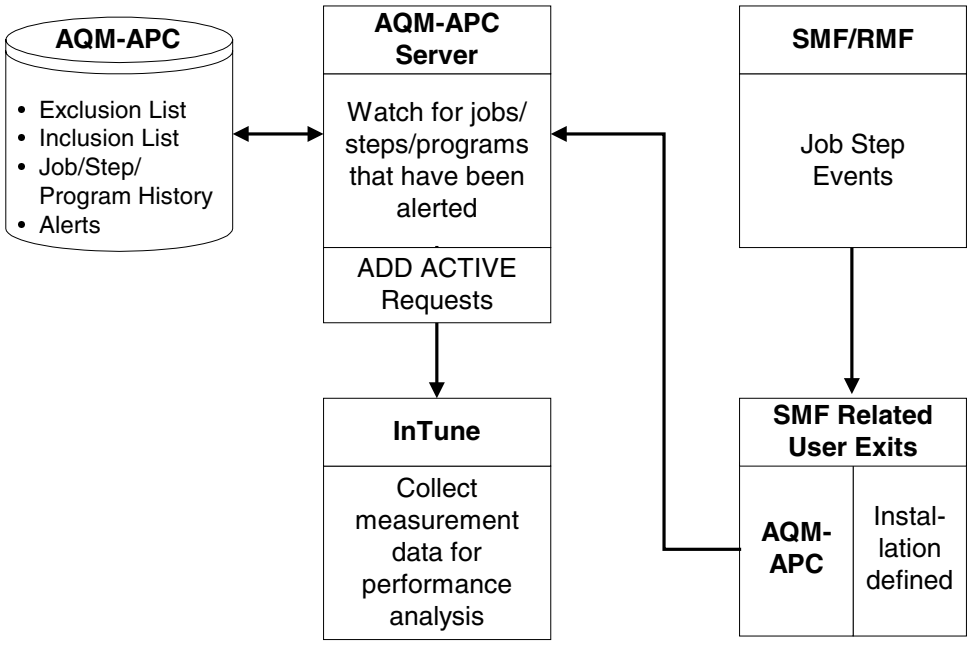


Figure 20: How the AQM-APC Server Works

The AQM-APC Server obtains the AQM-APC information about alerted job steps with STATE=PEND. Using this information, the AQM-APC Server reacts to the following scenarios:

- When an alerted job step is executed -- either user alerted or AQM-APC alerted --, an measurment request is automatically issued for the alerted job step.

- When a job step is finished and the AQM-APC Server has issued a measurement request, a DELETE or CANCEL request is performed to clean up the environment.

The following benefits are realized when the AQM-APC Server is used:

1. Avoid measurement requests.

   In the event more than one MVS machine is connected via JES Complex, it is not known on which machine a submitted job will run because this is managed by JES. This means, for example, if a measurement is desired, a common practice is to issue an measurement request on each machine. Because the AQM-APC Server is also on each machine, it knows which job steps to monitor and it knows which machine. Therefore, the AQM-APC Server will issue an measurment request on the MVS machine on which the job step is running.

2. Eliminate the need for job scheduling day plan input. The job steps needed to be measured are now much more effectively detected without regard to the scheduler plan.

3. User alerts are recognized in a timely manner via the alert refresh interval. Therefore, user alerts can be issued for ad-hoc situations.
4. Job restarts or reruns (i.e., after abnormal end) will be detected and measured.

The AQM-APC Server is intended to run 24 hours a day, 7 days a week. There are two refresh intervals:

1. Alert refresh. The alert refresh interval, by default, is every hour. The alert refresh is critical if user alerts are to be monitored.
2. Runtime interval refresh. The runtime interval refresh, by default, is every 24 hours. The runtime interval refresh simulates the stopping and restarting of the AQM-APC Server in order to reset internal counts and controls.

These refresh times can be changed.

If the AQM-APC Server is in use, all AQM-APC components will automatically be aware of and change their processing accordingly. Therefore, there is no need to change any JCL or scheduling considerations for any AQM-APC jobs if the AQM-APC Server is used (or not).

Getting Information

In general, MVS provides information about the performance of batch jobs using the following components:

- RMF - Resource Measurement Facility
- SMF - System Management Facility

RMF provides information related to the physical CPU environment, e.g., processor utilization of address spaces, I/O wait times, etc. Such information is presented at the address space level. Since a batch job may have more than one address space, this means that there is usually no direct correlation between a specific batch job of interest and the information provided.

On the other hand, SMF provides information about the system activity, e.g., started jobs, I/O requests issued from a job, etc. SMF writes this information to SMF data sets, which can be later inspected off-line with SAS or other user-written analysis procedures. SMF also writes the data collected by RMF to its own SMF data sets.

Analyzing SMF data off-line is not desirable for controlling the performance of an MVS batch environment. This is because the length of time between the analysis and the point of time where an action must be initiated is too long. The switching of SMF data sets is installation and activity dependent.

However, SMF provides a number of user-exits where performance control can „hook into“ and analyze the SMF data at the point when they are created and before the SMF data is written out to the SMF data set. The user-exit candidates for performance control are:

- **Job Initiation user exit - IEFUJI**

  This exit is called by SMF whenever a job is selected for execution by JES. For performance control, this exit can be used to filter out jobs of interest.

- **Step Initiation user exit - IEFUSI**

  This exit is called by SMF whenever a job step is set up by an initiator. For performance control, this exit can be used to filter out job steps of interest and (main) programs of interest.

- **Step Termination user exit - IEFACTRT**

  This exit is called by SMF whenever a job step is terminated by the terminator. For performance control, this exit can be used to obtain accumulated data for CPU time, SRB time, service units, EXCPs, and so on.

- **Job Termination user exit - IEFACTRT**

  This exit is called by SMF whenever a job is abnormally terminated. For performance control, this exit can be used to delete jobs of interest from the „watch-list“ and write accumulated data for historical purposes.

- **SMF Record Suppression user exit - IEFU83 / IEFU84**

  This exit is called by SMF whenever a record is created. For performance control, this exit is the most interesting one. Provided that the correlation between address spaces and currently active job steps are set up, performance control can „monitor“ the resource utilization within the intervals because RMF provides the processor utilization data. This results in a very precise activity measurement of the job step of interest and recognition when a job step exceeds its limits. Additionally, all information presented by SMF is available for selection to create individual performance statistics.

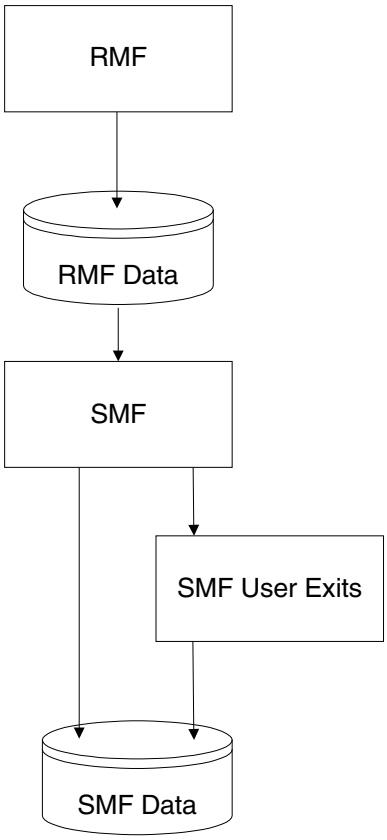


Figure 21: Getting Information

Technical Overview

The AQM-APC Server works with the Central Component to automate the control of measurements in batch. The AQM-APC Server collects information about the current system activity and compares this information with historical data in its AQM-APC database. When a job, step, or program appears to exceed its resource utilization, a measurement is initiated.

The AQM-APC Server runs like a subsystem of TSO, IMS, and so on, and uses Cross Memory Services (**CMS**) as well. That is, the AQM-APC Server acts as a service provider.

The MVS CMS is used to:

- Provide fast communication across address spaces.
- Exchange data across address spaces.
- Propagate events across address spaces.
- Provide AQM-APC authorized functions for clients.

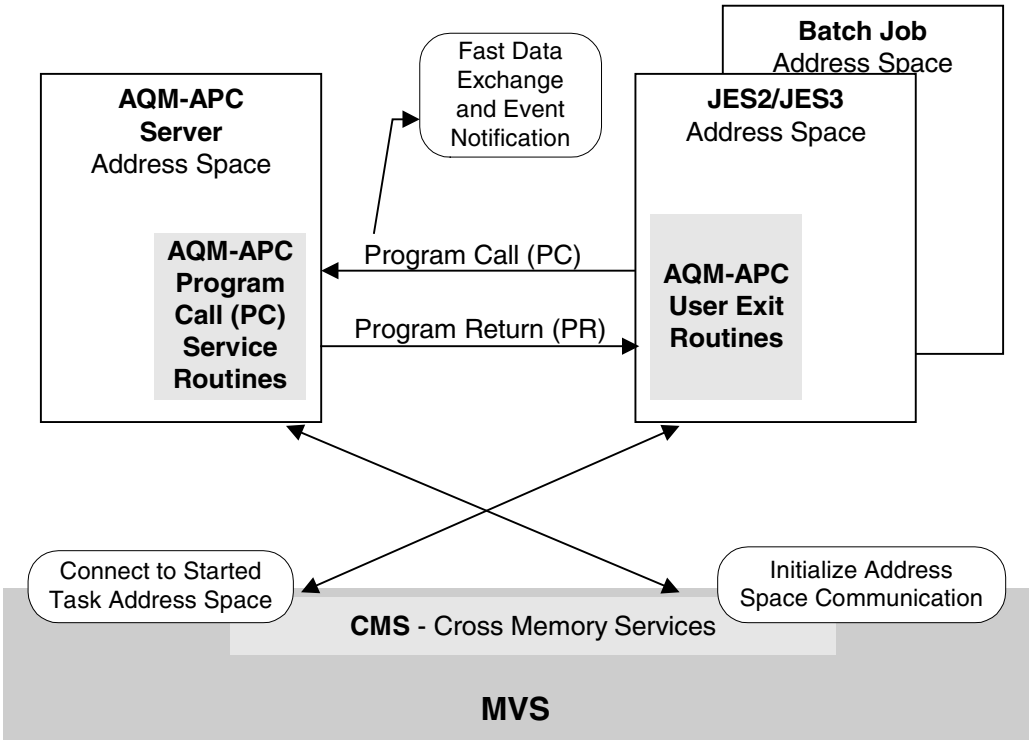


Figure 22: Technical Overview

AQM-APC Server Components

To set up a full function service provider, the following components are required for the AQM-APC Server:

- Initialization
- Operator Interface
- AQM-APC Database Interface
- Process Control
- Callable Services for Clients
- Termination

Each of these components is described in the following sections.

Initialization

The initialization component performs all the activity necessary to set up the AQM-APC Server as a service provider. The main tasks of this component are:

- **Initialize global programs.**
  - Allocate the minimum amount of storage required for proper initialization.
  - Initialize internal control blocks.
  - Setup an error recovery environment.
- **Check for the proper operating environment.**
  - Check that required AQM-APC modules are available and have the expected authorization.
  - Check for a possible previous failure and try to recover. For example, Cross Memory resources are restricted and may not be freed until an IPL is performed. However, these resources can be identified and reused again. Refer to the IBM publication titled *Authorized Assembler Services Guide.*
  - Check that required systems like SMF and RMF are operational.
- **Setup the CMS environment.** This makes PC service routines for other address spaces available. These routines are used by SMF user exits for fast data exchange and event notification.
- **Prepare and start all other components of the AQM-APC Server.**

Operator Interface

The operator interface is simply a subtask which monitors input entered from MVS consoles. Its purpose is to operate the AQM-APC Server, e.g., stop, change state, etc., and to enter measurement requests "on the fly" by the operating staff.

AQM-APC Database Interface

The AQM-APC database interface is simply a set of modules to access common used VSAM files from the AQM-APC Server and other components of the AQM-APC product.

Process Control

Process control is the event driven main component of the AQM-APC Server. The system activity events recorded by SMF and RMF are propagated through the AQM-APC supplied SMF/RMF user-exits to this component. For every event (e.g., start/terminate a job, step, or program, file activity, etc.), there is an action defined. If the event is of interest for batch controlling, the event data is summarized and compared with possible existing history data from the AQM-APC database. When an abnormal resource consumption is detected, the process control component automatically initiates a measurement request for the job, step, or program in question.

Callable Services for Clients

The callable services is a set of program call routines, which represent a unique interface for other address spaces to communicate with the AQM-APC Server via Cross Memory and to have access to protected resources in the AQM-APC Server address space in a controlled manner.

Termination Component

This component does all the activity to bring down the AQM-APC Server in an orderly manner. Termination may be requested by operator intervention or during the complete system shut down.

Cross-Memory Environment

To get information and events from other address spaces, the AQM-APC Server sets up a cross-memory environment and acts as a cross-memory AQM-APC Server. All requests from other address spaces to the AQM-APC Server will be handled through PC (program call) service routines.

PC Service Routine Specifications

All PC service routines of the AQM-APC Server will run with the following specifications:

Call Type Stacking

Amode 31

Rmode Any

Storage Key 0

CPU state Problem

PASN AQM-APC Server address space

SASN Callers address space

Transferring of information and data to or from the callers address space is done in access-register mode.

Providing Linkage Information

The linkage information for the address space requesting service from the AQM-APC Server is provided with the MVS name/token service (before an address space can „call“ a routine in another address space it must first „link“ to the servicing address space). No explicit requests for common storage -- neither above nor below the line -- are made for this purpose by the AQM-APC Server. Instead, a name/token for the calling address space will be created with the following specifications:

Type System owned

Key $APC0402 appended with eight binary zeros

Duration Non-persistent, will be deleted automatically when the AQM-APC Server ends abnormally.

The token part will contain the necessary linkage information to connect to the AQM-APC Server.

User Exits

The AQM-APC Server uses the following exit-points in the system:

SYS.IEFUJI	Job start exit
SYS.IEFUSI	Step start exit
SYS.IEFACTRT	Step / Job termination exit
SYS.IEFU83	SMF record exit.
SYS.IEFU84	SMF record exit.

By default, the AQM-APC Server installs these exits dynamically when it comes up, no changes are necessary in the control members of the SYS1.PARMLIB. When the AQM-APC Server terminates, these exits are also de-installed.

General Operation

All user-exists of the AQM-APC Server operate in a similar way for best performance and security.

1. The created name / token from the AQM-APC Server is retrieved to get the linkage information for the cross-memory environment. When this name / token cannot be found, the user-exit returns to the caller immediately.

2. The user-exit connects to the AQM-APC Server address space and calls the proper service routine with a PC (Program call) instruction.

3. After the AQM-APC Server service routine has returned control to the user-exit, the connection to the AQM-APC Server address space is released.

All user-exits return with a return-code of **zero** to the caller. Thus, any KEEPRC= specifications (either statically or dynamically) for other user-exits of the same exit-point in the system are not affected.

The above description determines that a user-exit only has connection to the AQM-APC Server address space for the processing of a single event, not across multiple user-exit calls by the system. This is for safety aspects. Whenever the AQM-APC Server terminates for some reason (cancel or abend), the created name / token for the linkage information is deleted by the system and is no longer available for the user-exits upon the next invocation. In this case, the uses-exits do nothing, even if they might still be activated. Also, it is possible to register the AQM-APC Server user-exits in the PROGxx member of the SYS1.PARMLIB statically with an active state at IPL time. As long as the AQM-APC Server has not come up and the name-token for the linkage is not present, the user-exits will effectively do nothing.

Installing and Customizing the AQM-APC Server

This section explains how to install the AQM-APC Server. In the event of site-specific customization requirements, this section also provides a description of all keyword parameters used.

System Requirements

The AQM-APC Server has the following system requirements:

- CPU

  Any CPU capable of executing the ESA/390 instruction set as described in the IBM manual *Principles of Operation*, Form.No. SA22-7201.

- Operating System

  MVS Version 5.2.2 or OS/390 version 1.3 and up.

- SMF

  SMF must be active for the AQM-APC Server and must generate SMF record type 30, subtypes 4 and 5.

- JES/SMF User Exits

  The following exit points must be active for proper operation of the AQM-APC Server:

SYS.IEFACTRT	Job/step termination exit.
SYS.IEFUJI	Job initiation exit.
SYS.IEFUSI	Step initiation exit.
SYS.IEFU83	SMF interval recording exit.
SYS.IEFU84	SMF interval recording exit.

Figure 23: Exit Points Required for the AQM-APC Server

Required Load Libraries

For the AQM-APC Server, there are two load libraries required:

- APC.LOAD
- APC.AUTH

These two load libraries should have been added to your system during normal product installation. There are no additional activities required to load any libraries from tape.

Assigning APF Authorization

The load library APC.AUTH contains all the modules which must run with APF authorization. Please register this library either dynamically or permanently as APF authorized on all the systems where the AQM-APC Server should run.

To register the APC.AUTH library as an APF authorized library dynamically on your system, you can issue the following command from an MVS console:

```
SETPROG APF,ADD,DSN=APC.auth,VOL=xxxxxx
```

To register the APC.AUTH library as an APF authorized library permanently when you use a dynamic APF list, please add the following control statement to your PROGxx member in the SYS1.PARMLIB:

```
APF   ADD DSN(APC.auth) VOL(xxxxxx)
```

To register the APC.AUTH library as an APF authorized library permanently when you use a static APF list, please add the following control statement to your IEAAPFxx member in the SYS1.PARMLIB:

```
APC.auth xxxxxx
```

Modifying the LINKLIST

During evaluation of the AQM-APC Server, member **LNKLST**xx of the **SYS1.PARMLIB** need not be modified since the AQM-APC Server can also run with a STEPLIB DD statement. However, to run the AQM-APC Server in a production environment, the APF authorized library **APC.AUTH** should be added to your LINKLIST.

AQM-APC Server Job Control

Member **APCSJSTC** in the product CNTL library contains the sample JCL to invoke the AQM-APC Server. Please review the DD statements and modify them to your needs and copy this member to one of your job control libraries for usage (PROCLIB). The member name can be any one of your choice.

Customizing the AQM-APC Server

To customize the AQM-APC Server, use the online dialog as described below. Using the dialog, you can define all parameters necessary to complete the installation and fine tune the AQM-APC Server.

Only in special cases, as requested by the AQM-APC technical support, is it necessary to modify the parameter table, which can be assembled and linked for changes. The name of the table module is APCSADEF and it resides on the unauthorized load library APC.LOAD**.** See "DSN of the library for the dynamic JES/SMF user exits or "LNKLST"

Enter the data set name of the library for the dynamic JES/SMF user exits. The value you define must be a valid data set name or special keyword "LNKLST". The default is LNKLST which means that LINKLIST/LPA/STEPLIB will be used to locate the AQM-APC Server exit routines.

Customization of this field is only required when one of the following is true:

1. During evaluation of the AQM-APC Server, you do not want to add the authorized library *prefix.APC.AUTH,* to the LINKLIST concatenation to prevent an IPL.

2. Quickfetch and/or PMO is being used and the Dynamic Exits Facility of MVS cannot locate exit routines in the LINKLIST concatenation.

To instruct the Dynamic Exits Facility not to search the LINKLIST for the AQM-APC Server's required exit routines, change the default parameter, LNKLST, to the name of the AQM-APC authorized library *prefix.APC.AUTH*.

Additional 8 Subsystem IDs for relevant jobs to watch

Enter up to 8 additional subsystems in which other jobs or AQM-APC Servers should be observed.

Alert refresh interval

Enter the alert refresh interval in minutes. The AQM-APC Server will wait this number of minutes before obtaining new alerts from the AQM-APC alert file. The default is 60 minutes.

Server runtime interval

Enter the AQM-APC Server runtime interval in hours. The default is 24 hours.

Internal reader class to submit job APCYJNAR by the AQM-APC Server

Define the internal reader class to be used by the AQM-APC Server when submitting job APCYJNAR. This value must be a valid installation defined character. The default is A.

MSG level for Server log

Enter a valid message level class for the AQM-APC Server log. The value must be 0, 1, 2, or 3. The default is 3 to output all messages.

" on page 164.

Defining General Parameters

From the AQM-APC Main Menu, select the AQM-APC Parameters option to display the Parameters Menu. On the Parameters Menu, select option **S1** to display the following panel:

```
APCSPP01 --- AQM-APC Server - General Parameters  -------------------------
COMMAND ===>

Server Password                  : ********** PW or Blank (En/Disables SERVER)
Checkpoint Checker Password      : ********** PW or Blank

DSN of the library for the dynamic
JES/SMF user-exits or "LNKLST"   : LNKLST

Additional 8 Subsystem IDs for
relevant jobs to watch           : A    B    C    Z

Alert refresh interval           : 0060       5-1440 minutes

SERVER runtime interval          : 24         1-24   hours

Internal reader class to submit
job APCYJNAR by the Server       : #          Internal Reader Value

MSG level for Server log            : 3          0-3

           Cancel: CAN
           Save  : END OR PF3
```

Panel APCSPP01: AQM-APC Server General Parameters

Use this panel to define general parameters for the AQM-APC Server. Other AQM-APC Server parameters, contained in parameter table APCSADEF, should only be modified at the request of your AQM-APC technical support representative.

Fields

AQM-APC Server Password

To enable the AQM-APC Server, enter the password provided by your AQM-APC product representative.

Checkpoint Checker Password

To enable the Checkpoint Checker, enter the password provided by your AQM-APC product representative.

DSN of the library for the dynamic JES/SMF user exits or "LNKLST"

Enter the data set name of the library for the dynamic JES/SMF user exits. The value you define must be a valid data set name or special keyword "LNKLST". The default is LNKLST which means that LINKLIST/LPA/STEPLIB will be used to locate the AQM-APC Server exit routines.

Customization of this field is only required when one of the following is true:

3. During evaluation of the AQM-APC Server, you do not want to add the authorized library *prefix*.APC.AUTH, to the LINKLIST concatenation to prevent an IPL.

4. Quickfetch and / or PMO is being used and the Dynamic Exits Facility of MVS cannot locate exit routines in the LINKLIST concatenation.

To instruct the Dynamic Exits Facility not to search the LINKLIST for the AQM-APC Server's required exit routines, change the default parameter, LNKLST, to the name of the AQM-APC authorized library *prefix*.APC.AUTH.

Additional 8 Subsystem IDs for relevant jobs to watch

Enter up to 8 additional subsystems in which other jobs or AQM-APC Servers should be observed.

Alert refresh interval

Enter the alert refresh interval in minutes. The AQM-APC Server will wait this number of minutes before obtaining new alerts from the AQM-APC alert file. The default is 60 minutes.

Server runtime interval

Enter the AQM-APC Server runtime interval in hours. The default is 24 hours.

Internal reader class to submit job APCYJNAR by the AQM-APC Server

Define the internal reader class to be used by the AQM-APC Server when submitting job APCYJNAR. This value must be a valid installation defined character. The default is A.

MSG level for Server log

Enter a valid message level class for the AQM-APC Server log. The value must be 0, 1, 2, or 3. The default is 3 to output all messages.

Modifying the Table Module

APCSSDEF is the source code of the table module **APCSADEF. APCSSDEF** resides in the installation library and references the following macros: **APCSMDEF, APCSMMID, APCSMCRT, APCSMVRM,** and **APCSMEND.** Sample JCL to assemble and link the customized table module is supplied in member **INSTJSTC.** All members reside on the installation library.

General parameters used by the AQM-APC Server may be defined using the AQM-APC online dialog. Only special modifications, i.e., those provided by your technical support representative, should be made in the source member **APCSSDEF** which overwrite the parameters provided in the **APCSMDEF** macro and illustrated below.

Figure 24: Keyword Parameters

```
.*****************************************************************
.** KEYWORD PARAMETERS:
.**
.** SMFCMBL    SMF COMMUNICATION BUFFER LENGTH
.**            - DEFINES THE SIZE OF THE COMMUNICATION BUFFER IN KB
.**              USED BY THE JES/SMF USER EXITS TO COMMUNICATE
.**              WITH THE SERVER
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - UNIT IS KILOBYTES
.**            - DEFAULT = 64  ---> WATCH 127 JOBS AT A TIME
.**
.** RQASPLG    REQUEST QUEUE AREA SUBPOOL LENGTH
.**            - DEFINES THE SIZE OF THE SERVER INTERNAL SUBPOOL  ....
.**              FOR DYNAMIC QUEUE DATA.
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 64  ---> TOTAL RQA SIZE = 256K
.**
.** RQASPNO    NUMBER OF RQA   SUBPOOLS TO ALLOCATE
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 4   ---> TOTAL RQA SIZE = 256K
.**              MAX     = 8
.**
.** ALFTBLSZ   ALLOCATION SIZE FOR ALERT TABLES
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 1  K
.**              MAX     = 32 K
.**
.** JIXTBLSZ   ALLOCATION SIZE FOR JOB/STEP INCLUDE/EXCLUDE TABLES
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 1  K
.**              MAX     = 32 K
.**
.** PIXTBLSZ   ALLOCATION SIZE FOR PROGRAM  INCLUDE/EXCLUDE TABLES
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 2  K
.**              MAX     = 32 K
.**
```

```
.** LMOTBLSZ   ALLOCATION SIZE FOR CHANGED LOADMOD TABLES
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 4  K
.**              MAX     = 32 K
.**
.** MLOGDDN    DDNAME FOR THE AQM-APC SERVER MESSAGE LOG
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSMLOG
.**
.** PARMDDN    DDNAME FOR THE AQM-APC PARAMETERS
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCPARAM
.**
.** TRCEDDN    DDNAME FOR THE AQM-APC SERVER TRACE FILE
.**            - CAN BE USED FOR PROBLEM DETERMINATION
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSTRCE
.**
.** SDSJDDN    DDNAME FOR SDS MODEL JCL
.**            - USED FOR AUTOMATIC MEASUREMENT GENERATION
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSTRCE
.**
.** LOGMODN    NAME OF MESSAGE WRITER MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA003
.**
.** VSTMODN    NAME OF VSAM SUBTASK SERVICE MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA004
.**
.** CLCMODN    NAME OF AQM-APC CALC TASK MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCBACAL
.**
.** TSKMODN    NAME OF THE APF AUTHORIZED TASK STUB MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA001
.**
.** SIOMODN    NAME OF AQM-APC SERVER'S BSAM/QSAM SERVICE MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA002
.**
.** VSMMODN    NAME OF AQM-APC SERVER'S VSAM SERVICE MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCXAVSM
.**
.** TRCMODN    NAME TRACE SUBTASK MODULE (FOR PROBLEM DETERMINATION)
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA005
.**
.** SRQMODN    NAME INTUNE REQUEST CREATE SUBTASK MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA006
.**
```

```
.** SDSMODN    NAME SDS JOB CREATE/SUBMIT MODULE
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSA007
.**
.** EXITS      NAMES OF THE JES/SMF USER-EXIT MODULES
.**            - ORDER OF NAMES MUST BE KEPT
.**            - MUST BE A VALID NAME
.**            - DEFAULT = APCSACTR - SYS.IEFACTRT
.**                        APCSAUJI - SYS.IEFUJI
.**                        APCSAUSI - SYS.IEFUSI
.**                        APCSAU83 - SYS.IEFU83
.**                        APCSAU84 - SYS.IEFU84
.**
.** DNXDSN     DSN OF THE LIBRARY FOR THE DYNAMIC JES/SMF USER-EXITS
.**            - MUST BE A VALID DSNAME OR SPECIAL KEYWORD 'LNKLST'
.**            - DEFAULT = LNKLST --> USE LINKLIST/LPA TO LOCATE
.**                                   THE SERVERS EXIT-ROUTINES
.**
.** SUBSID     ADDITIONAL SUBSYSTEM IDS FOR RELEVANT JOBS TO WATCH
.**            - MUST BE A VALID NAME
.**            - DEFAULT = <NONE>
.**
.** CTINTVL    INTERNAL CONTROL TIME INTERVAL (SERVER'S HEART BEAT)
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - UNIT IS SECONDS
.**            - DEFAULT = 60
.**
.** ALTRTVL    ALERT REFRESH INTERVAL TO GET NEW SUBMITTED ALERTS
.**            FROM THE AQM-APC ALERT FILE.
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - UNIT IS MINUTES
.**            - DEFAULT = 60
.**
.** STCRTVL    AQM-APC SERVER RUNTIME INTERVAL
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - UNIT IS HOURS
.**            - DEFAULT = 24
.**
.** SALSTVL    STEP ALLOCATION SAMPLING INTERVAL
.**            USED TO FIND OUT WHEN THE JOB-STEP GOES OUT OF
.**            THE ALLOCATION PHASE.
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - UNIT IS SECONDS
.**            - DEFAULT = 5
.**
```

```
.** STRMCPU    MINIMUM STEP CPU TIME INTUNE REQUESTS
.**            SPECIFIES THE MINUMUM CPU TIME A JOBSTEP MUST HAVE
.**            BEFORE AN "ADD ACTIVE" REQUEST CAN BE SCHEDULED.
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 2 CPU SECONDS
.**
.** STRRCNT    RETRY COUNT FOR FAILED INTUNE REQUESTS
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 2
.**
.** STRMAXR    MAXIMUM NUMBER OF STROBE REQUEST PER SERVER RUNTIME
.**            INTERVAL
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 100
.**
.** STRGMIN    GOMIN DEFAULT VALUE FOR MEASUREMENT REQUESTS
.**            - MUST BE DECIMAL, SELF DEFINING TERM
.**            - DEFAULT = 10
.**
.** STRDSNP    DSNAME PREFIX FOR STROBE MEASUREMENTS
.**            NOTE: VALUE WILL BE OVERWRITTEN BY SPECIFICATION
.**                  IN THE PARMS FILE
.**            - MUST BE A VALID DSNAME
.**            - DEFAULT = STROBE.APC.M
.**
.** NARDSNP    DSNAME PREFIX FOR NARROW MEASUREMENT DATASETS
.**            NOTE: VALUE WILL BE OVERWRITTEN BY SPECIFICATION
.**                  IN THE PARMS FILE
.**            - MUST BE A VALID DSNAME
.**            - DEFAULT = STROBE.APC.NAR
.**
.** STRSAMP    SAMPLES AND ADDITIONAL PARMS FOR MEASUREMENT REQUEST'S
.**            NOTE: VALUE WILL BE OVERWRITTEN BY SPECIFICATION
.**                  IN THE PARMS FILE
.**            - CAN BE ANYTHING ACCPTABLE FOR MEASURMENT REQUEST'S
.**            - DEFAULT = ' SAMPLECNT(10000)'
.**
.** STRVOL     VOLSER FOR MEASUREMENTS
.**            - MUST BE A VALID VOLUME NAME
.**            - DEFAULT = <NULL>
.**
.** STRUNIT    UNIT FOR MEASUREMENTS
.**            NOTE: VALUE WILL BE OVERWRITTEN BY SPECIFICATION
.**                  IN THE PARMS FILE
.**            - MUST BE A VALID UNIT NAME
.**            - DEFAULT = SYSDA
.**
.** MSGLVL     MESSAGE-LEVEL FOR THE AQM-APC SERVER LOG
.**            - MUST BE A VALID DIGIT 0,1,2,3
.**            - DEFAULT = 3 (ALL MESSAGES)
.**
```

```
.** SDSRCLS    INTERNAL READER CLASS TO SUBMIT SDS JOB BY THE SERVER
.**            - MUST BE A VALID INSTALLATION DEFINED CHAR
.**            - DEFAULT = A
.**
.** DSECT      GENERATE DSECT OR CSECT
.**            - DEFAULT = NO ==> GENERATE CSECT
.**
.*****************************************************************
```

Operating the AQM-APC Server

This section explains how to activate and terminate the AQM-APC Server.

☞ **Note:** Before the AQM-APC Server can be activated on your system, it must be enabled to run on your installation. Please call your AQM-APC representative for support.

Activating the AQM-APC Server

When activating the AQM-APC Server as a 'normal' batch job, submit the modified member APCSJSTC with a valid job card from your (possibly private) job product library.

When activating the AQM-APC Server as a 'real' AQM-APC Server, please enter the following command from a console:

```
S <member>
```

where: <*member*> is the name of the prepared JCL for the AQM-APC Server on a JCL procedure library.

Terminating the AQM-APC Server

The AQM-APC Server can be terminated from a console with the stop command:

```
P <name>
```

where: <*name*> is the job name of the AQM-APC Server when activated as a 'normal' batch job, or the name of the PROCLIB member when activated as a 'real' AQM-APC Server.

Customizing the AQM-APC Checkpointchecker

To use the Checkpointcheckerfeature you have to activate the exit APCSAMPF. To activate this exit do following:

- The Exit APCSAMPF must be on a Loadlib which is contained in the Linklistconcatination (LPA isn't required). Otherwise if he should afterwards be put, not forget LLA-Refresh at such a library, he cannot be activated. Of course the Refresh isn't, if required the Exit shall get active only with IPL.
- Modifying the MPF-Members on SYS1.PARMLIB (the general name is: MPFLST00). The following lines must be inserted under retention of the sorting order (no existing lines delete or type over):
    - DFS681I,SUP(NO),USEREXIT(APCSAMPF)
      DFS683I,SUP(NO),USEREXIT(APCSAMPF)
      DFS0540I,SUP(NO),USEREXIT(APCSAMPF)
      DFS0542I,SUP(NO),USEREXIT(APCSAMPF)
- Activate the Exit with /SETPROG MPF = 00 (for our example, if, the MPF-Membername is MPFLSTAB so use the Command /SETPROG MPF = off). Otherwise becomes the Exit to next IPL actively.

Chapter 6. Performing Maintenance

Maintenance consists of deleting unwanted measurements and verifying batch job log information and PTFs. Option **6** on the AQM-APC Main Menu displays the Maintenance menu to perform these functions.

☞ **Note:** Periodic reorganization of the Central Component clusters is also needed. For details regarding this IDCAMS reorganization, see section "Job APCXJREO - Maintenance and Reorganization" on page 71.

```
APCXP900 ============================================================================
---------------------------------------------------------------------------------
---------------------------------------------------------------------------------
--------------------------------  AQM - APC  ------------------------------------
---------------------------------------------------------------------------------
APC-PROD---------- >>>>>>   M A I N T E N A N C E   <<<<<< --------------------
---------------------------------------------------------------------------------
=================================================================================

      OPTION  ===>
                    1 CICS Feature Process Control
                    2 IMS Feature Process Control
                    3 Central Component Job Log
                    4 Central Component Measurement Access
                    5 Central Component Alert Delete Options
                    6 PTF Level
                    X or END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```

Panel APCXP900: Maintenance Menu

The Maintenance Menu provides the following options:

1	View and/or delete system performance information for CICS.
2	View and/or delete system performance information for IMS.
3	Review log information of the AQM-APC batch jobs.
4	View and/or delete measurements from the Central Component database.
5	Define the delete options to be used for automatically deleting the AQM-APC alerts for the Central Component.
6	View the PTF IDs installed in the AQM-APC load library.

CICS and IMS Feature Process Control

When option **1** for CICS or option **2** for IMS is selected, detail lines of AQM-APC information is displayed for each system. For illustration, the CICS Feature is used to demonstrate this option.

```
APCDP906 --- AQM-APC - IMS Feature - MAINTENANCE ------------ Row 1 to 2 of 2
COMMAND ===>                                                  SCROLL ===> CSR

                            Date: 2002.03.18
Line Commands: SO - System Overview
               D  - Delete all AQM-APC data of the selected system and date

LC   System     CC   NoPro     CPUsec    Waitsec   IntID   NoVSAM
-------------------------------------------------------------------------------
     IMS        OK      18       7,585     82,204    000     2,633
     IMS123     OK       1         346      4,553    010       440
****************************** Bottom of data ********************************
```

Panel APCDP906: CICS and IMS Feature Maintenance Panel

Using the Panel

Both primary commands and line commands are allowed on this panel.

1. Line commands can be used to work with a particular job name displayed in the list. To use line commands, place the cursor in the LC column to the left of the job name name and enter one of the following:

   SO Review the System Overview panel.

   D Delete the AQM-APC data for the selected system and date.

CICS and IMS System Maintenance

When line command **SO** is used on the Maintenance panel, an overview of all performance information is listed. By default, the historical information is displayed for the last three months. However, historical information for up to 18 months can be displayed by changing the Show Recent Months field.

```
PROD123U---- AQM-APC - CICS Feature - MAINTENANCE ---------- Row 1 to 14 of 23
COMMAND ===>                                                 SCROLL ===> CSR

System       : PAP1                              Show recent months: 03


Date       Jobname   CC  Time   Consuming Time min  EXCPS  Sam. Error Marg.%
                              Elps CPU  Wait Str.        pro    Run    CPU
-------------------------------------------------------------------------------
2002.07.02 CIC1PAP1  OK   9.02  473  302  231    0     557   10  00.98  01.23
2002.07.01 CIC1PAP1  OK   9.01  490  358  201   13     828   10  00.98  01.14
2002.06.30 CIC1PAP1  OK   9.01  486  325  228    0     967   10  00.98  01.21
2002.06.29 CIC1PAP1  OK   9.01  464  270  239    0     557   10  00.98  01.30
2002.06.26 CIC1PAP1  OK   9.01  442  189  280    0     334   10  00.98  01.53
2002.06.25 CIC1PAP1  OK   9.01  440  194  272    3     400   10  00.98  01.47
2002.06.24 CIC1PAP1  OK   9.01  440  193  273    0     356   10  00.98  01.51
2002.06.23 CIC1PAP1  OK   9.01  439  202  270    0     365   10  00.98  01.47
2002.06.22 CIC1PAP1  OK   9.01  444  217  263    0     434   10  00.98  01.41
2002.06.19 CIC1PAP1  OK   9.01  427  155  291    0     265   10  00.98  01.67
2002.06.18 CIC1PAP1  OK   9.01  432  174  284    0     344   10  00.98  01.57
2002.06.17 CIC1PAP1  OK   9.01  443  217  258    9     410   10  00.98  01.39
2002.06.16 CIC1PAP1  OK   9.01  455  242  253    0     441   10  00.98  01.34
2002.06.12 CIC1PAP1  OK   9.01  392   73  323    0      73   10  00.98  02.41
```

Panel APCDP906: CICS and IMS Feature Maintenance Panel

All measurements are displayed. For each processed measurement, the related system is listed. The measurement can relate to two systems if so defined under System Control.

Using the Panel

1. Review the list of measurements.

2. To review more information, change the the number of months in the Show Recent Months field. A maximum of 18 months is allowed.

Columns

System

The system name from the System Control panel.

Jobname

Jobname of the start up job.

CC

AQM-APC condition code from processing the measurements. An OK indicates that the processing completed. An F1 or F2 indicates job APCYJNAR did not complete processing access in the online – may lead to abnormal termination. All F1 and F2 data should be deleted

Time

Start time of the measurement.

Consuming Time Elps

Elapsed time of measurement.

Consuming Time Wait

Total wait time consumed during measurement.

Consuming Time CPU

Total CPU time consumed during measurement.

Consuming Time Str

Total stretch time consumed during measurement.

EXCPs

Total EXCPs, in thousands, performed during measurement.

Sam Pro

Total samples, in thousands, processed during measurement.

Error Margin %-Run

Error margin of run time figures during measurement.

Error Margin %-CPU

Error margin of CPU figures during measurement.

Central Component Job Log

To review the processing status of batch jobs and to see some statistical information about processed job steps, select option **3** on the AQM-APC Maintenance Menu.

```
PROD123U---- AQM-APC Central Component - Job Log --------------- Row 1 from 56
COMMAND ===>                                                  SCROLL ===> CSR

Show : S  Short/Long
------------------------------------------------------------------------------
#>>>>>> START APCBAJCL 2002-08-25 17:10 SCAN JCL LIB FOR XREF MODULE JOB
#<<<<<< ENDED APCBAJCL 2002-08-25 17:28 CONDITION CODE: 00
#>>>>>> START APCXALMO 2002-08-25 17:28 SCAN LOAD LIB FOR CHANGED MODULES
#<<<<<< ENDED APCXALMO 2002-08-25 17:58 CONDITION CODE: 00
#>>>>>> START APCBAALM 2002-08-25 17:59 GENERATE DAILY STROBE ADD REQUESTS
#<<<<<< ENDED APCBAALM 2002-08-25 18:01 CONDITION CODE: 00
#>>>>>> START APCBACAL 2002-08-26  5:46 STATISTICAL CALCULATIONS OF JOBS
#<<<<<< ENDED APCBACAL 2002-08-26  5:52 CONDITION CODE: 00
#>>>>>> START APCYANAR 2002-08-26  5:52 APC PROCESSING OF STROBE SAMPLE DS
#<<<<<< ENDED APCYANAR 2002-08-26  6:12 CONDITION CODE: 00
****************************** Bottom of data********************************
```

Panel APCXP800: Job Log - Short View

For the most current AQM-APC production cycle, batch jobs of the Central Component are displayed along with a processing summary and statistics for each of the following batch job steps.

- APCBASMF gathers information about executed job steps from SMF record 30 (subtype 4). Your AQM-APC Scope of work definitions are used in determining which jobs to look at.

- APCBACAL uses the gathered information from APCBASMF to calculate statistical values regarding consumed elapsed time and service units and checks if the last job step execution exceeds them. If it finds a runaway job step, a pending alert is created.

- APCYANAR evaluates *InTune* measurements which resulted from AQM-APC generated measurements. AQM-APC saves the information if one of the user defined threshold values (CPU time, Elapsed time or EXCPs) is exceeded.

- APCBAJCL scans all JCL libraries to gather information for cross referencing which job step calls which application program or which program is called from which job steps.

- APCXALMO scans all load libraries for new and changed programs.

- APCBAALM performs alert management. Alerts with reason code = "module changed" will be created. Pending alerts will be selected to generate *InTune* measurement requests.

Both long and short views of the available job log information can be selected. A short view of information is displayed as the default when the Job Log option is entered on the Maintenance Menu. A long view of the information includes the processing statistics for each job. To switch between short and long views, enter **S** or **L** in the Show field. The following figure is a panel that illustrates the information available with the long view.

```
PROD123U---- AQM-APC Central Component - Job Log -------------- Row 37 from 56
COMMAND ===>                                                  SCROLL ===> CSR

Show : L  Short/Long
--------------------------------------------------------------------------------
NO OF MEASURED STEPS         0032038     TEST ADJUSTMENT STEPS       0000000
NO OF NEW JOBFILE ENTRIES    0000633     UPDATED JOBFILE ENTRIES     0030401
NO OF NEW ALERTED STEPS      0000001     PENDING ALERTED STEPS       0000069
NO OF NON ALERTED STEPS      0000000     MULTIPLE ALERTS/SESSION     0000000
NO OF ERRONEOUS IN-STEPS     0001004     CCODE SUPPRESSED STEPS      0000820
================================================================================
APCBACAL ENDED SUCCESSFUL                              ELAPSED TIME  00362 SEC
#<<<<<< ENDED APCBACAL 2002-08-26  5:42 CONDITION CODE: 00
 #>>>>>> START APCYASUB 2002-08-26  5:50
>>>  JOB GENERATED   TYPE =  CICS          JOB# = 001     MEMBER# = 006
>>>  JOB GENERATED   TYPE =  IMS           JOB# = 002     MEMBER# = 018
>>>  JOB GENERATED   TYPE =  BATCH         JOB# = 003     MEMBER# = 010
>>>  JOB GENERATED   TYPE =  BATCH         JOB# = 004     MEMBER# = 010
>>>  JOB GENERATED   TYPE =  BATCH         JOB# = 005     MEMBER# = 002
#<<<<<< ENDED APCYASUB 2002-08-26  5:51 CONDITION CODE: 00
#>>>>>> START APCYANAR 2002-08-26  5:52 APC PROCESSING OF INTUNE MONITOR DS
APCXANAR TOTAL STATISTIC                              FROM DATE 2002-08-26
================================================================================
BATCH   MEASUREMENTS HANDLED                                          0025
CICS    MEASUREMENTS HANDLED                                          0004
IMS     MEASUREMENTS HANDLED                                          0018
TOTAL   MEASUREMENTS HANDLED                                          0086
================================================================================
APCYANAR ENDED SUCCESSFUL                             USED TIME   1128 SEC
#<<<<<< ENDED APCYANAR 2002-08-26  6:12 CONDITION CODE: 00
```

Panel APCXP800: Job Log - Long View

Central Component Measurement or Measurement Access

Option **4** of the Maintenance Menu allows you to review measurements of the Central Component.

```
 APCBP901---- AQM-APC - Measurement Maintenance ------------------- Row 1 from
2488
 COMMAND ===>
                                                    SCROLL ===> PAGE
Jobname      : *             From date: 2002.06.25
Commands     : SORT J/D/R/E/C/W/ST/EX - Job/Date/Req/Elpsd/Cpu/Wait/STret/EXcps
Line Commands: D - Delete Measurement
                                                                 Calculated
LC Jobname  Stepname Procstep Date       Time Meas Elpsd  CPU Wait Stret  Excps
-------------------------------------------------------------------------------
   ZZRZ1O05 RZPROC1  RZSTP02  2002.04.14 06:45 100     5    0    4     0    202
   ZZRZ1PST RZSTP05  B92PULL  2002.04.14 05:14 100    49   19   11    18      2
   ZZOP1WIE OPSTP02  TSO01    2002.04.14 04:38 100    18   12    3     2      8
   ZZWE1252 WEPROC1  WESTP01  2002.04.14 04:01 100     0    0    0     0      0
   ZZYR1PZD YRPROC1  YRSTP02  2002.04.14 03:02 100     4    0    3     0     30
   ZZVT1N16 VTPROC1  VTSTP01  2002.04.14 02:40 100     1    1    0     0      0
   ZZAM8390 AMPROC1  AMSTP02  2002.04.14 02:38 100     0    0    0     0      2
   ZZOC1EU3 OCSTP03  TSO01    2002.04.14 01:59 100    15   10    3     1      0
   ZZKS1352 KSPROC1  KSSTP05  2002.04.14 01:07 100    31    2   15    13    285
   ZZRZ1SCC RZSTP02  ROCHADE  2002.04.14 01:01 100     6    0    3     2      0
   ZZOP1IM2 OPPROC1  DASTP05  2002.04.14 00:16 100     4    0    3     0     24
   ZZYI1M04 YISTP01  DLI01    2002.04.13 23:54 100     5    1    2     1     78
   ZZKE2043 KEPROC1  KESTP01  2002.04.13 23:44 100    16    6    4     5    103
   ZZYI1LBW YIPROC1  YISTP04  2002.04.13 22:00 100    16    0   15     0    513
   ZZLZ8814 LZPROC1  LZSTP01  2002.04.13 15:33 100     4    2    1     0      0
```

Panel APCBP901: Measurement Maintenance

The Measurement Maintenance panel is similar to the Central Component Measurement List panel.

Using the Panel

1. To sort the information listed in the columns, use primary command **sort** for the column in which the lines should be sorted by.

2. To delete unwanted measurements, enter line command **D** in the LC column to the left of the unwanted measurement.

Central Component Alert Delete Options

Option **5** of the Maintenance Menu allows you to define the options to be used for automatically deleting alerts within the Central Component.

```
APCBP902 --- AQM-APC - Alert Delete Options -----------------------------------
COMMAND ===>

Define the lifetime of alerts for job steps.
Immediate delete of alerts in TSO: N  Y,N (processed with ENTER key)

State   Days until deleted    Alert state description
--------------------------------------------------------------------------------
PEND         190              Alert waiting for a measurement
OPEN         190              Alert waiting to be processed by user
REV          360              Alert in process by user
CUSE         360              Alert closed by user
CMUL         360              Alert closed because multiple implicit closes
COVT         360              Alert closed by take over (new statistical base)
CTHR         007              Alert closed because out of scope of work
CIMP         007              Alert closed implicit by statistics


           Cancel: CAN
           Save  : END OR  PF3
```

Panel APCBP902: Alert Delete Options

The Alert Delete Options panel should be used to define the alert lifetime and/or the method to be used when automatically deleting alerts within the Central Component.

Using the Panel

1. To delete alerts immediately, i.e., during your current online TSO session, enter Y in the Immediate delete of alerts field. Press <ENTER>.

2. To define the lifetime for particular alert states in days, place the cursor in the Day Until Deleted column and enter the maximum number of days that an alert with this state should be kept. You can use this delete option in addition to the use of the TSO online delete process. The lifetime definitions are used the next time job APCXJREO is executed to reorganize the AQM-APC database.

3. To disable the delete process for a specific alert state, enter a lifetime value of 999.

PTF Control

Option **6** of the Maintenance Menu allows you to view installed PTFs in the AQM-APC load library.

```
APCXP901 --- AQM-APC - PTF Control --------------------------- Row 1 to 17 of 62
COMMAND ===>                                                   SCROLL ===> PAGE

                   AQM-APC Version 430   created  April 2002
     PTF Id        Load Lib: PREFIX.APC.LOAD
--------------------------------------------------------------------------------
           0
           1
           2
           3
           4
           5
           6
           7
           8
           9
          10
          11
         412
         413
         414
         415
         416
```

Panel APCXP901: PTF Control Panel

Chapter 7. Troubleshooting

There may be situations when the Central Component does not produce expected results. The following is an overview of possible problems, their causes, and their solutions.

In general, if processing problems with AQM-APC occur, execute job INSTJCCK in your install library to verify that all AQM-APC files are OK.

Measurements do not display online although measurements were made and threshold values were exceeded.

Reason: It is possible that the sample data set prefix entered in the AQM-APC parameters was modified after completion of the *InTune* measurements but before processing by the APCYJSUB job.

Solution: Set the prefix back to its original value and only set the new prefix after APCYJSUB processing has been completed.

Reason: You renamed the sample data set so that the data set prefix and the prefix defined in the AQM-APC parameters no longer match.

Solution: Rename the sample data set back to its original name so that the APCYJSUB job can find and interpret the data and copy them into the AQM-APC history file.

S106 System abend when creating a measurement in foreground or background.

Reason: Region size too small.

Solution: Enlarge the region size for your TSO user or for the batch job step.

APCXANAR ABEND: S001
APCEREP: FILE: APCBIPP1 RC: 08 REASON: 28

Reason: There is no space left on the volume for a secondary allocation.

Solution: Rerun the job to delete / define the IPP cluster. Either increase the primary allocation amount or define a new volume name with more free space.

S315/0C4 System abend in jobs APCBJINV, APCIJINV, or APCCJINV

Solution: Initialize the queue data set as described in the APCBJINV job member.

Appendix A. Installation Job JCL

This appendix illustrates sample jobs that must be submitted to install AQM-APC. The job JCL is customized and generated using the online installation dialog.

Create Libraries - Job INSTJLIB

The following job is generated by option 1 of the online installation dialog.

JCL for INSTJLIB - Create Product Libraries

```
//JOBCARD…
//*********************************************************************
//* AQM-APC INSTALLATION JOB                                          *
//* ========================                                          *
//*                                                                   *
//* FUNCTION: CREATE ALL PRODUCT LIBRARIES                            *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//CREATE  EXEC PGM=IEFBR14
//CNTL    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.CNTL,
//           SPACE=(CYL,(1,1,30)),
//           DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSDA
//EXEC    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.EXEC,
//           SPACE=(CYL,(1,1,30)),
//           DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSDA
//LOAD    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.LOAD,
//           SPACE=(CYL,(1,1,30)),
//           DCB=(RECFM=U,BLKSIZE=6144),
//            UNIT=SYSDA
//MLIB    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.MLIB,
//           SPACE=(CYL,(1,1,30)),
//           DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSDA
//PLIB    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.PLIB,
//           SPACE=(CYL,(5,1,90)),
//           DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSDA
//AUTH    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.AUTH,
//           SPACE=(CYL,(1,1,30)),
//           DCB=(RECFM=U,BLKSIZE=6144),
//            UNIT=SYSDA
//PARM    DD DISP=(MOD,CATLG),
//           DSN=prefix.APC.PARMS,
//           SPACE=(CYL,(1,1)),
//           DCB=(RECFM=FB,LRECL=80),
//            UNIT=SYSDA
//*
//*
//*
```

```
//NOTIFY   EXEC PGM=IEBGENER,COND=(0,NE)
//SYSUT1   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//         DD *
2002/03/12 09:34  #1 INSTJLIB   CREATE PRODUCT LIBRARIES - SUCCESSFUL
//SYSUT2   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
```

Link Product Programs - Job INSTJLNK

The following job JCL is generated by option 3 of the online installation dialog.

JCL for INSTJLNK - Link Product Programs

```
//JOBCARD...
//*********************************************************************
//* LINK:       LINK AQM-APC PRODUCT PROGRAMS                         *
//* =====                                                             *
//*                                                                   *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKNCAL EXEC  PGM=IEWL,PARM='XREF,LIST,NCAL,REUS(REFR)'
//SYSLIB   DD DISP=SHR,DSN=NULLFILE
//SYSUT1   DD SPACE=(CYL,(02,1),,CONTIG),DISP=(,DELETE),
//            DCB=(OPTCD=C,BLKSIZE=1024),
//            UNIT=SYSDA
//SYSPRINT DD SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD DISP=(,PASS),DSN=&&LOADLIB,UNIT=SYSDA,
//            DCB=(RECFM=U),
//            SPACE=(CYL,(1,1,50))
//SYSLIN   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTLNK1)
//*
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKAL   EXEC  PGM=IEWL,PARM='XREF,LIST'
//SYSLIB   DD DISP=SHR,DSN=SYS1.LINKLIB
//         DD DISP=OLD,DSN=&&LOADLIB
//         DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//         DD DISP=SHR,
//            DSN=SYS1.ISP.SISPLOAD
//         DD DISP=SHR,
//            DSN=SYS1.CSSLIB
//SYSUT1   DD SPACE=(CYL,(02,1),,CONTIG),DISP=(,DELETE),
//            DCB=(OPTCD=C,BLKSIZE=1024),
//            UNIT=SYSDA
//SYSPRINT DD SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//SYSLIN   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTLNK2)
//*
//*-------------------------------------------------------------------
//*        COPY AQM-APC STC MODULN INTO THE AQM-APC AUTH LOAD LIBRARY
//*-------------------------------------------------------------------
//COPYSTC  EXEC  PGM=IEBCOPY
```

```
//FROM     DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//TO       DD DISP=SHR,
//            DSN=prefix.APC.AUTH
//SYSPRINT DD SYSOUT=*,OUTLIM=20000
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTLMOV)
//*
//NOTIFY   EXEC PGM=IEBGENER,COND=(4,LT)
//SYSUT1   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//         DD *
2002/03/11 13:50  #2 INSTJLNK   LINK PRODUCT PROGRAMS    - SUCCESSFUL
//SYSUT2   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
```

Create Product Databases

Option 4 of the online installation dialog generates three jobs: job INSTJFIL to create the product databases, job INSTJCCK to check them, and job INSTJINI to initialize them.

Create Product Databases - Job INSTJFIL

The following job is generated by option 4 of the online installation dialog.

JCL for INSTJFIL - Create Product Databases

```
//JOBCARD...
//*
//*
//*
//*********************************************************************
//* INSTJFIL:   CREATE PRODUCT DATA BASES                             *
//* =========   VSAM/PS                                               *
//*                                                                   *
//* ATTENTION:  THIS JOB DELETES ALL EXISTING VSAM CLUSTERS THAT HAVE*
//* =========   THE SAME NAME.                                        *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//*********************************************************************
//*    PART1:   VSAM
//*********************************************************************
//*    CREATE TEMP FILES
//*********************************************************************
//CREATE   EXEC  PGM=APCBAB24
//STEPLIB  DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//BLANK24  DD DSN=&&BLANK24,DISP=(NEW,PASS),
//            UNIT=SYSDA,
//            SPACE=(TRK,(1,1))
//*********************************************************************
//*    CREATE AQM-APC ALT FILE
//*********************************************************************
//AMSALT  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTNULL)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFALT)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROALT)
//*
//*********************************************************************
//*    CREATE AQM-APC BPM FILE
//*********************************************************************
//AMSBPM  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTNULL)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFBPM)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROBPM)
//*
```

```
//*******************************************************************
//*    CREATE AQM-APC CIC FILE
//*******************************************************************
//AMSCIC  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTNULL)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFCIC)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROCIC)
//*
//*******************************************************************
//*    CREATE AQM-APC CPP FILE
//*******************************************************************
//AMSCPP  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFCPP)
//*
//*******************************************************************
//*    CREATE AQM-APC EXC FILE
//*******************************************************************
//AMSEXC  EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//TEMP     DD  *
2DFH*                   STANDARD PROGRAM EXCLUDED                    X
2DSNUTILB               STANDARD PROGRAM EXCLUDED                    X
2ICEGENER               STANDARD PROGRAM EXCLUDED                    X
2IDCAMS                 STANDARD PROGRAM EXCLUDED                    X
2IEB*                   STANDARD PROGRAM EXCLUDED                    X
2IEFBR14                STANDARD PROGRAM EXCLUDED                    X
2IEWL                   STANDARD PROGRAM EXCLUDED                    X
2SORT                   STANDARD PROGRAM EXCLUDED                    X
2SYSSORT                STANDARD PROGRAM EXCLUDED                    X
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFEXC)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROEXC)
//*
//*******************************************************************
//*    CREATE AQM-APC IMS FILE
//*******************************************************************
//AMSIMS  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTNULL)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFIMS)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROIMS)
//*
```

```
//*********************************************************************
//*    CREATE AQM-APC IPP FILE
//*********************************************************************
//AMSIPP  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFIPP)
//*
//*********************************************************************
//*    CREATE AQM-APC JOB FILE
//*********************************************************************
//AMSJOB  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTBLAN)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFJOB)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROJOB)
//*
//*********************************************************************
//*    CREATE AQM-APC LMO FILE
//*********************************************************************
//AMSLMO  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DSN=&&BLANK24,DISP=(OLD,PASS)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFLMO)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROLMO)
//*
//*********************************************************************
//*    CREATE AQM-APC CMO FILE (LMO CICS)
//*********************************************************************
//AMSCMO  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DSN=&&BLANK24,DISP=(OLD,PASS)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFCMO)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROCMO)
//*
//*********************************************************************
//*    CREATE AQM-APC IMO FILE (LMO IMS)
//*********************************************************************
//AMSIMO  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DSN=&&BLANK24,DISP=(OLD,DELETE)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFIMO)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROIMO)
//*
//*********************************************************************
//*    CREATE AQM-APC PRO FILE
```

```
//*******************************************************************
//AMSPRO  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//TEMP     DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INSTNULL)
//SYSIN    DD DISP=SHR,
//            DSN=prefix.APC.CNTL(DEDEFPRO)
//         DD DISP=SHR,
//            DSN=prefix.APC.CNTL(REPROPRO)
//*
//*******************************************************************
//*    PART2:   PS
//*******************************************************************
//*
//*******************************************************************
//* ADDRQ     CREATE ADD REQUEST FILE
//*******************************************************************
//*
//ADDRQ   EXEC PGM=IEFBR14
//NEW      DD DISP=(MOD,CATLG),
//            DSN=prefix.APC.ADDRQ,
//            UNIT=SYSDA,SPACE=(CYL,(1,2)),
//            DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*******************************************************************
//* DELRQ      CREATE DEL REQUEST FILE
//*******************************************************************
//*
//DELRQ   EXEC PGM=IEFBR14
//NEW      DD DISP=(MOD,CATLG),
//            DSN=prefix.APC.DELRQ,
//            UNIT=SYSDA,SPACE=(CYL,(1,2)),
//            DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*******************************************************************
//* DELRQTOM   CREATE DEL REQUEST FILE FOR TOMORROW
//*******************************************************************
//*
//DELRQTOM  EXEC PGM=IEFBR14
//NEW      DD DISP=(MOD,CATLG),
//            DSN=prefix.APC.DELRQTOM,
//            UNIT=SYSDA,SPACE=(CYL,(1,2)),
//            DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*******************************************************************
//* CICDELRQ   CREATE DEL REQUEST FILE CICS
//*******************************************************************
//*
//CICDELRQ  EXEC PGM=IEFBR14
//NEW      DD DISP=(MOD,CATLG),
//            DSN=prefix.APC.CICRQ,
//            UNIT=SYSDA,SPACE=(CYL,(1,2)),
//            DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*******************************************************************
```

```
//* IMSDELRQ   CREATE DEL REQUEST FILE IMS
//*******************************************************************
//*
//CICDELRQ  EXEC PGM=IEFBR14
//NEW       DD DISP=(MOD,CATLG),
//             DSN=prefix.APC.IMSRQ,
//             UNIT=SYSDA,SPACE=(CYL,(1,2)),
//             DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*
```

```
//*********************************************************************
//* APCLOG     CREATE AQM-APC BATCH LOG FILE
//*********************************************************************
//*
//APCLOG  EXEC PGM=IEFBR14
//NEW      DD DISP=(MOD,CATLG),
//            DSN=prefix.APC.LOG,
//            UNIT=SYSDA,SPACE=(CYL,(1,2)),
//            DCB=(DSORG=PS,LRECL=80,RECFM=FB)
//*
//*
//*
//NOTIFY   EXEC PGM=IEBGENER,COND=(0,NE)
//SYSUT1   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//         DD *
2002/03/12 14:34  #3 INSTJFIL   CREATE PRODUCT DATA BASE - SUCCESSFUL
//SYSUT2   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
```

Check Databases - Job INSTJCCK

JCL for INSTJCCK - Check Databases

```
//JOBCARD...
//*********************************************************************
//* INSTJCCK:    CHECK ALL AQM-APC VSAM CLUSTER FOR FULL              *
//* =========    ACCESSABILITY                                        *
//*                                                                   *
//* FUNCTION:    COND CODE = 00  ALL AQM-APC CLUSTERS OK              *
//*              COND CODE = 12  APCREP SHOWS INVALID CLUSTER         *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//*********************************************************************
//* CHECK ALL AQM-APC CLUSTER
//*********************************************************************
//APCXACCK EXEC PGM=APCXACCK
//STEPLIB  DD DSN=prefix.APC.LOAD,
//            DISP=SHR
//APCPARAM DD DSN=prefix.APC.PARMS,
//            DISP=SHR,
//            FREE=CLOSE
//APCBIPP1 DD DSN=prefix.APC.RRDSIPP,
//            DISP=SHR
//APCBCPP1 DD DSN=prefix.APC.RRDSCPP,
//            DISP=SHR
//APCBPRO1 DD DSN=prefix.APC.KSDSPRO,
//            DISP=SHR
//APCBBPM1 DD DSN=prefix.APC.KSDSBPM,
//            DISP=SHR
//APCBALT1 DD DSN=prefix.APC.KSDSALT,
//            DISP=SHR
//APCBLMO1 DD DSN=prefix.APC.KSDSLMO,
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.APC.KSDSJOB,
//            DISP=SHR
//APCIPRO1 DD DSN=prefix.APC.KSDSIMS,
//            DISP=SHR
//APCCPRO1 DD DSN=prefix.APC.KSDSCIC,
//            DISP=SHR
//APCBEXC1 DD DSN=prefix.APC.KSDSEXC,
//            DISP=SHR
//APCEREP  DD SYSOUT=*
//APCREP   DD SYSOUT=*
//APCJLOG1 DD DSN=prefix.APC.LOG,
//            DISP=MOD
//*
//*
//*
```

```
//NOTIFY   EXEC PGM=IEBGENER,COND=(0,NE)
//SYSUT1   DD DISP=SHR,DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//         DD *
2002/03/12 14:34  #5 INSTJCCK   CHECK PRODUCT DATA BASE  - SUCCESSFUL
//SYSUT2   DD DISP=SHR,DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
```

Initialize Databases - Job INSTJINI

JCL for INSTJINI - Initialize Databases

```
//JOBCARD...
//*********************************************************************
//* INSTJINI:   INITIALIZE PRODUCT DATABASES                          *
//* =========                                                         *
//*                                                                   *
//*-------------------------------------------------------------------*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                          *
//*********************************************************************
//*
//*-------------------------------------------------------------------*
//*  LOAD FIRST REC IN AQM-APC   C I C S    P R O F I L E   P O O L *
//*-------------------------------------------------------------------*
//INIT     EXEC  PGM=APCXAVI0
//STEPLIB  DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//APCBIPP1 DD DISP=SHR,
//            DSN=prefix.APC.RRDSCPP
//APCEREP  DD SYSOUT=*
//*
//*-------------------------------------------------------------------*
//*  LOAD FIRST REC IN AQM-APC   I M S    P R O F I L E   P O O L   *
//*-------------------------------------------------------------------*
//INIT     EXEC  PGM=APCXAVI0
//STEPLIB  DD DISP=SHR,
//            DSN=prefix.APC.LOAD
//APCBIPP1 DD DISP=SHR,
//            DSN=prefix.APC.RRDSIPP
//APCEREP  DD SYSOUT=*
//*
//*
//NOTIFY   EXEC PGM=IEBGENER,COND=(0,NE)
//SYSUT1   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//         DD *
2002/03/12 14:34  #4 INSTJINI   INITIALIZE DATA BASE     - SUCCESSFUL
//SYSUT2   DD DISP=SHR,
//            DSN=prefix.APC.INST.V43.LIB(INST$JOB)
//SYSIN    DD DUMMY
//SYSPRINT DD SYSOUT=*
```

Appendix B. Parameter Worksheet

Use this worksheet to plan and keep track of the values you assign when installing AQM-APC.

Parameter	Meaning	Your Value
Global DS Parameters		
General data set prefix	High level qualifier for AQM-APC data sets	
PS data sets	Unit, volume and suffix	
PO data sets	Unit, volume and suffix	
VSAM data sets	Unit, volume and suffix	
TEMP data sets	Unit and Volume	
Blocksize at LRECL=80		
DSN Suggestion 1		
REXX library	product data sets	
Panel library	product data sets	
Message library	product data sets	
CNTL library	product data sets	
Load library	for product programs	
Auth load library	for product authorized programs. Used for AQM-APC Server only.	
Parm dataset	for user parameters	
ADD Request dataset	INVOKE commands	
DEL Request dataset	CANCEL commands	
DEL Tomorrow dataset	CANCEL commands for tomorrow	
Batch log dataset	for batch job log information	

DSN Suggestion 2		
JOB ksds	Batch job statistics	
ALT ksds	Alerts	
LMO ksds (Basis Comp.)	Link module information	
CMO ksds (Option CICS)	Link module information	
IMO ksds (Option IMS)	Link module information	
EXC ksds	Scope of work exclusions	
PRO ksds	Batch measurement	
BPM ksds	Batch management	
CIC ksds	CICS measurement information	
CPP rrds	Native measurements of CICS	
IMS ksds	IMS/DC measurement information	
IPP rrds	Native measurements of IMS/DC	
Job Parms		
InTune load library	InTune unauthorized load module library	
job statement	for install and production jobs	
Sub-Products		
InTune version	Valid version number of InTune. If InTune is used, leave this field blank	
InTune load	General purpose unauthorized load library for InTune	
InTune SDS	The unit name. If not SMS managed, enter the volume name to enable *Intune's* creation of the measurement.	
Link Programs		
ISPF system load lib	Data set name of your ISPF system load library.	
MVS callable services	Data set name of system load library used for MVS callable services.	

Appendix C. Messages

This appendix details each of the error messages that might be issued by one of the Central Component programs. The program name is normally in front of the message. In all exceptions, there will be a note in front of the programs. For each message, the reason for the message and an action is provided.

APCBAALM : TERMINATED BY MISSING PARAMETERS

Reason: The program APCBAALM needs all important parameters for measurement requests.

Action: Define all parameters via the product's online dialog.

APCBACAL : ERROR ON PASSWORD : EXIT

Reason: The password of the Central Component is expired or missing.

Action: Contact your AQM-APC representative.

APCBACAL : ERROR ON JOB FILE : EXIT

Reason: The access to the job file cluster failed.

Action: Check the job file cluster or set up a reorganization with APCBAJRE.

APCBACAL : ERROR ON ALERT FILE ACCESS : SKIPPED

Reason: The access to the alert file cluster failed.

Action: Check the alert file cluster or set up a reorganization with APCBAJRE.

APCBACAL : GLOBAL ALERT : SOME ALERTS SUPPRESSED

Reason: When processing a high load, only five alerts in sequence will be created.

Action: Information only.

APCBACAL : ERROR ON FOLLOWING INPUT RECORD :

Reason: The SMF #30 input record has a non-numerical date.

Action: The record is printed in APCREP and discarded.

APCBAJCL : PASSWORD HAS EXPIRED

Reason: The password of the Central Component is expired or missing.

Action: Contact your AQM-APC representative.

APCBAJCL : TOO MANY STANDARD PROGRAMS (>99)

Reason: There are more than 99 standard programs defined.

Action: The remaining programs will be discarded.

APCBAJCL : TOO MANY STANDARD PROCEDURES (>495)

Reason: There are more than 495 standard procedures defined.

Action: The remaining procedures will be discarded.

APCBAJCL : INVALID LIBRARY NAME, LIBRARY IGNORED

Reason: There is an invalid library name.

Action: The library will be skipped.

APCBAJCL : TOO MANY JOBLIBS (>99)

Reason: There are more than 99 job libraries defined.

Action: The remaining job libraries will be ignored.

APCBAJCL : NO JOBLIB DEFINED

Reason: There is no job library defined. The program terminates.

Action: The program terminates. Define at least one job library via the product's online dialog.

APCBAJCL : TOO MANY STANDARD PROC LIBRARIES (>10)

Reason: There are more than 10 procedure libraries defined.

Action: The remaining procedures libraries will be discarded.

APC11 PROCESSED JOBLIB: <libname>

Reason: The job library <libname> is processed.

Action: Information only.

APC22 <jobname> <pname> <dname> NO EXEC IN PROC FOUND

Reason: The procedure <pname> of job <jobname> has no EXEC statement.

Action: Check your procedure <pname>.

APC23 <jobname> <pname> <dname> FOR STD PROCEDURE NO DDNAME FOUND

Reason: The expected DDNAME of the standard procedure is not found in JCL.

Action: Check your JCL or the definition of standard procedures.

APC24 <jobname> <procname> PROCEDURE NOT FOUND IN PROCLIB

Reason: The procedure <procname> of job <jobname> not found in the library.

Action: Check your Proc libraries declarations.

APC25 <jobname> <pname> <dname> PROCEDURE STACK OVERFLOW (>80).

Reason: There are more then 80 procedures called without any return.

Action: Check your procedure declaration against recursive calls.

APC26 <jobname> <pname> <dname> NO PROCLIB DEFINED

Reason: There is no procedure library defined.

Action: Check your procedure libraries declarations.

APC31 <jobname> <procname> <dataname> DATALIB ACCESS FAILED (NOT FOUND)

Reason: The member <dataname> is not in the library or the library does not exist.

Action: The next step will be analyzed.

APC32 <jobname> <procname> <dataname> KEY- or POSITIONAL PARAMETER NOT FOUND.

Reason: The predefined keyword or the position is not found in the construction.

Action: No substitution will be done. The next step will be analyzed.

APC40 <jobname> <pname> <dname> UNEXPECTED JCL CONSTRUCTION

Reason: An unexpected JCL construction was found during the JCL scan.

Action: Check the job <jobname> or the procedure <pname>.

APC42 <jobname> <pname> <dname> PROGRAM FOUND AS PROC VARIABLES

Reason: The program in EXEC statement contains an ampersand.

Action: Warning.

APC43 <jobname> <pname> <dname> PROCEDURE FOUND AS PROC VARIABLES

Reason: The procedure in EXEC statement contains an ampersand.

Action: Warning.

APC44 <jobname> <pname> <dname> DATA FOUND AS PROC VARIABLES.

Reason: The data name contains an ampersand.

Action: Warning.

APCBAJRE : ERROR DETECTED : EXIT

Reason: There is an error via VSAM access detected.

Action: Check your job file or alert cluster or contact your AQM-APC representative.

APCBAPRE : ERROR DETECTED : EXIT

Reason: There is an error via VSAM access detected.

Action: Check your measurement clusters (PRO/BPM) or contact your AQM-APC representative.

APCBASCN : ERROR ON MEASUREMENT CLUSTER

Reason: There is an error via VSAM access detected.

Action: Check your measurement cluster (PRO) or contact your AQM-APC representative.

APCBASCN : ERROR ON BPM CLUSTER

Reason: There is an error via VSAM access detected.

Action: Check your measurement cluster (BPM) or contact your AQM-APC representatives.

APCBASCN : OVERFLOW ON LINE AREA

Reason: There are too many lines (>6000) in a specific narrow report chapter such as #PUP.

Action: Contact your AQM-APC representative.

APCBASCN : #MSD IN BAD CONDITION

Reason: In the global #MSD report, some important values are missing or destroyed.

Action: The measurement will be discarded.

APCBASMF : WRITE ERROR ON SMF#30 RECORDS: EXIT

Reason: There is an error detected during a sequential write.

Action: Check the data set definition or contact your AQM-APC representative.

APCBATAB : ERROR DETECTED : EXIT

Reason: There is an error detected via VSAM access.

Action: Check your job file cluster or contact your AQM-APC representative.

APCBAXCJ : ERROR IN EXCLUSIONS DETECTED : EXIT

Reason: There is an error detected via VSAM access.

Action: Check your exclusion cluster or contact your AQM-APC representative.

APCXATAB : ERROR DETECTED : EXIT

Reason: There is an error detected via VSAM access.

Action: Check your CICS or IMS cluster or contact your AQM-APC representatives.

APCXALMO : NO LOADLIBS IN THE AQM-APC PARAMETER DATASET

Reason: There is no load library in the AQM-APC parameters defined.

Action: Define at least one load library via the online dialog.

APCXALMO : AQM-APC PASSWORD HAS EXPIRED

Reason: The password of central components is expired or missing.

Action: Contact your AQM-APC representative.

CICS and IMS Measurement Scan Messages

The corresponding programs are APCGASCI, APCGASCO, and APCGASCN.

APCDE02 : ERROR GOTTEN ON INPUT LINE CHAPTER=#XXX LINE=NNNNN

Reason: During the analysis of the narrow list in chapter #*xxx* on line *nnnn*, an error was detected (wrong format).

Action: The line is printed and discarded.

APCDE03 : NO ORDER EXTRACTED : PGM TERMINATES

Reason: There is no valid order to execute.

Action: Check your system definitions.

APCDE04 : SHORTAGE ON MAIN STORAGE : PGM TERM.

Reason: The ordered main buffer is not big enough. Set up the parameter "SS" in the parameter file. The following SS values are allowed : SSS / SSM / SSL and SSX, where SSX is the highest value for buffer ordering.

Action: The buffer is ordered from the area above 16 MB.

APCDE05 : I/O ERROR ON VSAM ACCESS : PGM TERM.

Reason: There is an error detected via VSAM access.

Action: Check your clusters or contact your AQM-APC representative.

APCDE06 : NO FREE SUBSYSTEM ID : PGM TERM.

Reason: There is no free internal subsystem id (0,...,255).

Action: Check your system declarations or contact your AQM-APC representative.

APCDE07 : TOO MANY ORDERS GENERATED: PGM TERM.

Reason: There are more then 255 orders from the incoming measurement data sets and the corresponding system declarations generated.

Action: Check your system declarations or reduce the measurement data sets.

APCDE09 : PARAMETER FILE EXCLUS.IN USE : EXIT

Reason: The parameter file is exclusively in use.

Action: Try again later.

APCDE10 : RECORD TYPE "A" IN ERROR : SKIPPED

Reason: There is an incomplete record type "A" found, i.e., a former run of APCXANAR was cancelled or in error.

Action: The detected record with all its appendices are deleted and the new record "A" is stored.

APCDE20 : POOL QUEUE OF #PSU IN ERROR : EXIT

Reason: The pool queue of report chapter #PSU is destroyed.

Action: Contact your AQM-APC representative.

APCDE23 : INCOMPLETE MEASUREMENT EXCLUDED : <jobname>

Reason: The measurement is incomplete and has been excluded.

Action: This message occurs only with one of the following messages, APCDE23M, APCDE23P, or APCDE23C. Refer to the corresponding action for these messages.

APCDE23C : NO TRANSACTION ENTRY FOUND

Reason: The measurement is incomplete and has been excluded.

Action: Check the InTune parameters.

APCDE23M : MEASUREMENT SESSION DATA INCOMPLETE

Reason: The measurement is incomplete and has been excluded.

Action: Verify the InTune version.

APCDE23P : NO PROGRAM ENTRY FOUND

Reason: The measurement is incomplete and has been excluded.

Action: Check the *InTune* parameters.

APCDS01 : NARROW INPUT RECORDS = <nnn>

Reason: Number <nnn> of input records of the narrow measurement.

Action: Information only.

APCDS0n : VSAM <type> RECORDS = <rrr> BYTES = <bbb>

Reason: Number <rrr> VSAM records with <bbb> bytes of record type <rrr>.

Action: Information only where n is 2,3,...9.

APCDS11 : MEASUREMENT INCLUDED VIA TIME RANGE : <job>

Reason: The CICS / IMS measurement with the jobname <job> is inside of the defined time range(s) of system declarations.

Action: Information only.

APCDS12 : MEASUREMENT EXCLUDED VIA TIME RANGE : <job>

Reason: The CICS / IMS measurement with the jobname <job> does not fit with any time range of the system declarations.

Action: Check your system declarations.

APCDW25 : WARNING : NO TRANSACTION FOUND : <jobname>

Reason: The measurement with printed <jobname> has no transactions.

Action: The measurement is skipped. Check your parameters.

APCDW27 : WARNING : MEASUREMENT SKIPPED BY DATE : <jobname>

Reason: The measurement with printed <jobname> has no corresponding time window.

Action: Check your system declarations.

APCDW05 : WARNING : NO MODULES FOUND : <job>

Reason: The measurement with the jobname <job> has no valid modules in the report chapter #PSU.

Action: Prolonge your measurement session time.

APCDW07 : WARNING : MEASUREMENT SKIPPED BY DATE : <job>

Reason: The measurement with the jobname <job> is already stored in AQM-APC.

Action: Information only.

APCDW08 : WARNING : TIME DEVIATION TO HIGH : <job>

Reason: The measurement with the jobname <job> is inside of a defined time window but has a late starting time.

Action: Check your system declarations.

APCDW28 : WARNING : TIME DEVIATION TOO HIGH : <jobname>

Reason: The measurement with printed <jobname> is inside a defined time window but has a late starting time.

Action: Check your system declarations.

APCDW29 : WARNING : SOME NUMERICAL ERRORS :

Reason: During measurement analysis some numerical errors are detected, i.e., there is no CPU time on the declared position in the measurement.

Action: Information only.

APCXACCK : ERROR DETECTED ON CLUSTER : <name>

Reason: APCXACCK has an error on cluster <name> detected.

Action: Check or reorganize your cluster.

APCYASUB and APCYANAR Messages

There are two types of messages issued by these jobs, global and measurement specific.

Global Messages

EVERY AQM-APC FEATURE PASSWORD IS INVALID. NO AQM-APC PROCESSING

Reason: All passwords are invalid.

Action: Contact your AQM-APC representative.

THE AQM-APC PREFIX FOR SAMPLE DS DID NOT MATCH WITH ANY EXISTING DATA SET

Reason: There are no measurement data sets.

Action: Check your prefix and the corresponding entries.

MORE THAN 32 NAME SUBSTITUTIONS FOUND

Reason: There are more then 32 substitutions for preproduction renaming.

Action: Reduce the substitutions.

THIS IS NOT A InTune MONITOR DATA SET : <name>

Reason: The data set <name> is not a *InTune* sample data set.

Action: Check the data set name defined.

MEASUREMENT DATA SET IS EMPTY : <name>

Reason: The current data set <name> is empty.

Action: Information only.

Measurement Specific Messages

The following messages are measurement specific..

☞ **Note:** The name of the measured job name will be in front of the message.

jobname **: NO CICS PROCESSING. EXCEEDS 100 MEASUREMENTS**

Reason: There are more then 100 CICS measurements to handle.

Action: Reduce the measurements or contact your AQM-APC representatives.

jobname **: LOGICAL VSAM ERROR OCCURED IN CICS POOL**

Reason: There is a logical VSAM error on CICS RRDS-Cluster.

Action: Check the RRDS-Cluster or contact your AQM-APC representatives.

jobname **: NO IMS PROCESSING. EXCEEDS 100 MEASUREMENTS**

Reason: There are more then 100 IMS measurements to handle.

Action: Reduce the measurements or contact your AQM-APC representatives.

jobname **: LOGICAL VSAM ERROR OCCURED IN IMS POOL**

Reason: There is a logical VSAM error on IMS RRDS-Cluster.

Action: Check the RRDS-Cluster or contact your AQM-APC representatives.

jobname **: IMPROPER MEASUREMENT (FEWER 150 LINES)**

Reason: The current measurement has fewer then 150 lines in total.

Action: The measurement is discarded. Check your InTune parameters.

jobname **: UPDATE IN ALERT FILE FAILED**

Reason: The update of the alert file failed.

Action: Check your alert cluster or contact your AQM-APC representatives.

jobname **: NO JOB STATISTICS FOUND**

Reason: 1) This job is probably not in the AQM-APC Scope of work, e.g., a sample data set was input to AQM-APC but NOT initiated by AQM-APC.

2) A user alert was issued for a job that is not in the AQM-APC Scope of work.

Action: Information only.

AQM-APC Server Messages

The AQM-APC Server component is a batch monitor that will monitor job steps and automatically generate the *InTune* Monitor Invoke requests on an as needed basis.

Message Format

All messages issued by the AQM-APC Server have the following general format:

APCS*nnns* *text*

where:

nnn is a unique message number

s is a severity code which can have the following values:

- **I** information, no action required.
- **W** warning, results might not be as expected.
- **E** error, but processing continues.
- **S** severe error, an operation failed and processing will also terminate controlled.
- **T** terminating error, an operation failed and processing will terminate immediately.
- **U** unrecoverable error, an unexpected error or condition occurred, the AQM-APC Server might abend.

text is the message text.

The severity code corresponds to the jobstep condition codes **0, 4, 8, 12, 16, 20** of the AQM-APC Server, respectively.

Message Destination

All messages are written to a log file with DD-name **APCSMLOG.** However, messages may also be issued to the job log under the following conditions:

1. When the message log file is not usable, all messages go to the job log.
2. A copy of certain messages with severity code **I, W,** and **E** go also to the job log when they reflect an important change of the AQM-APC Server processing state.
3. Messages with severity code **S, T,** and **U** are always written to both, the Server's log file and the job log.

List of Messages

APCS001I APC AQM-APC SERVER, GENLEVEL APCSA000,
ccyymmdd/hhmm/VvvRrrMmm/pppp

Reason: This is the starting message of the AQM-APC Server which is always the first message in the message log where

ccyymmdd is the assembly date of the main module.

hhmm is the assembly time of the main module.

vvrrmm is the version, release, and modification level of the AQM-APC Server.

pppp is the number (hex) of the last applied ptf.

Action: None. However this message can be used in your automation process to indicate that the AQM-APC Server is about to initialize itself.

APCS002I PROCESSING TERMINATED, RC=*nnnnnnnn*

Reason: This is the final termination message of the AQM-APC Server which shows the job step condition code.

Action: None.

APCS003I *tttttttt* TASK, GENLEVEL *mmmmmmmm*,
ccyymmdd/hhmm/VvvRrrMmm/pppp

Reason: Whenever the AQM-APC Server main task starts a subtask, the processing module ***mmmmmmmm*** of the attached subtask responds with this message. The other variable fields in this message have the same meaning as in message **APCS001I**.

Action: None.

APCS004I INTERVAL TIMER ACTIVATED, STD-INTERVAL=ss.sss SEC

Reason: The internal time interval for “alive checks" has been successfully set up.

Action: None.

APCS005I ABOUT TO CREATE INTERNAL CONTROL TABLES

Reason: The initialization process of the AQM-APC Server has gone now to reading the VSAM files for alerts, changed modules, and so on.

Action: None.

APCS006I InTune REQUESTS WILL BE PROCESSED BY MODULE *mmmmmmmm*

Reason: Locate processing for required modules has found InTune service module ***mmmmmmmm*** to issue requests to InTune.

Action: Normally none. However, you can check if the AQM-APC Server has found the correct module when you have installed more than one *STROBE* version. At the time, STRBCCV should be found for *STROBE* version 1.9, and STRBCSR should be found for *STROBE* version 2.x.

APCS007I *pppppppp* PROCESSING COMPLETE, RC=*nnnnnnnn*

Reason: Processing of phase ***pppppppp*** has been completed with return code ***nnnnnnnn***.

Action: None.

APCS008I ADDRESS SPACE SET NON-SWAPPABLE, NOT REGISTERED IN PARMLIB MEMBER

Reason: The AQM-APC Server acts as a cross-memory server and needs to be non-swappable. The main program APCSA000 is not registered in the parmlib member SCHEDxx, and thus, the AQM-APC Server is set dynamically non-swappable.

Action: Normally none. However, you can register the AQM-APC Server main program in the parmlib member SCHEDxx as non-swappable to suppress this message.

APCS009I ADDRESS SPACE SET SWAPPABLE, NOT REGISTERED IN PARMLIB MEMBER

Reason: The initialization process found, that the AQM-APC Server main program was not registered in the parmlib member SCHEDxx. When the dynamically set non-swappable state is no longer required it is set back to the swappable state.

Action: Normally none. Please see message APCS008I.

APCS010W THIS JOB IS NOT INITIATED AS AQM-APC SERVER

Reason: The AQM-APC Server is intended to run as a AQM-APC Server, but also can run as a "normal" batch job.

Action: Check if you really want the AQM-APC Server as a "normal" batch job.

APCS011I ALERT REFRESH INTERVAL EXPIRED, RELOADING ALERT TABLE

Reason: The interval for reloading new information from the alert VSAM file has been expired. The internal control tables of the AQM-APC Server for alerts are now updated.

Action: None.

APCS012I SERVER RUNTIME INTERVAL EXPIRED, RESETTING

Reason: The runtime interval which simulates a stop and a subsequent start of the AQM-APC Server has been expired. Counts for the maximum number of *InTune* requests, overload conditions, and so on are reset as though the AQM-APC Server had been activated again via a console start command.

Action: None.

APCS013I HIGHEST ALERT-ID IN ALERT FILE IS *nnnnnnnn*

Reason: When loading the alert file, the indicated alert ID ***nnnnnnnn*** was the highest one found.

Action: None.

APCS020I STORAGE FOR *ssssssss* ALLOCATED, ADDR=*aaaaaaaa*, LENGTH=*11111111*

Reason: Storage for data or tables with internal name ***ssssssss*** has been allocated at virtual address ***aaaaaaaa*** in length ***lllllll****l*.

Action: None.

APCS021S UNABLE TO ALLOCATE STORAGE FOR MOD=*mmmmmmmm*, LEN=*11111111*, LOC=*111*, BDY=*bbbb*

Reason: The AQM-APC Server was unable to obtain virtual storage to load required module *mmmmmmmm*. The requested length for virtual storage was *llllllll* with location ***lll*** (BEL, ANY, RES) and a boundary of ***bbbb*** (DWRD or PAGE).

System Action: The AQM-APC Server terminates.

Action: Please check for a sufficient region size on the jobcard or exec-card.

APCS022I STORAGE FOR *ssssssss* FREED, ADDR=*aaaaaaaa*, LENGTH=*11111111*

Reason: Storage for data or tables with internal name ***ssssssss*** has been freed at virtual address ***aaaaaaaa*** in length ***lllllll****l*.

Action: None.

APCS030I LOAD MOD=*mmmmmmmm*, LP=*aaaaaaaa*, EP=*eeeeeeee*, LG=*11111111*, AM=*am*, RM=*rm*, ATTR=*aa*. ..

Reason: Unauthorized module ***mmmmmmmm*** was successfully loaded at address ***aaaaaaaa***. The module's entry point address is ***eeeeeeee*** and has a length of ***llllllll*** with AMODE *am* and RMODE *rm*. The module attributes ***aa*** may be OL (only loadable), RU (reusable), RN (reentrant), RF(refreshable).

Action: None.

APCS031I LOAD MOD=*mmmmmmmm*, LP=*aaaaaaaa*, EP=*eeeeeeee*, LG=*11111111*, AM=*am*, RM=*rm*, ATTR=*aa* ...

Reason: Same as message APCS030I, but for authorized modules.

Action: None.

APCS032W InTune SERVICE MODULE *mmmmmmmm* NOT FOUND, InTune REQUESTS DISABLED

Reason: The AQM-APC Server could not locate one of the defined *InTune* service modules.

System Action: For this run, no InTune requests to watch a particular job step are generated and issued.

Action: Please check, if the required *InTune* service module resides in a library which is in the linklist concatenation.

APCS033W TRACE SERVICE MODULE *mmmmmmmm* NOT FOUND, UNABLE TO ACTIVATE TRACE

Reason: The AQM-APC Server could not find its service module to generate an internal trace for diagnostic purposes.

System Action: The internal trace is not available, but processing continues.

Action: Normally none. However, for diagnostic purposes the trace module should be available.

APCS034S UNABLE TO LOCATE MODULE *mmmmmmmm*, LSEARCH=*1*, DCB=*aaaaaaaa*

Reason: The AQM-APC Server could not find required module ***mmmmmmmm***.

System Action: Processing terminates.

Action: Please check, if the AQM-APC Server component is installed correctly.

APCS040I *tttttttt* TASK ATTACHED, TCB=*aaaaaaaa*, STUB=*mmmmmmmm*, PGM=*pppppppp*, EP=*aaaaaaaa*

Reason: The AQM-APC Server has attached subtask ***tttttttt*** successfully. The TCB address for this subtask is ***aaaaaaaa***, the authorized program-stub module is ***mmmmmmmm***, and the processing program name is ***pppppppp*** with entry point address ***aaaaaaaa.***

Action: None.

APCS041I *tttttttt* TASK TERMINATED NORMALLY, TCB=*aaaaaaaa*, CODE=*cccccccc*, CPUTIME=*c.ccc* SEC

Reason: The attached subtask ***tttttttt*** has terminated normally with a completion code ***cccccccc*** and consumed a CPU time of ***c.ccc*** seconds.

Action: None.

APCS042I ***tttttttt*** **TASK READY FOR WORK**

Reason: Subtask ***tttttttt*** has itself initialized and is now ready for doing some work.

Action: None.

APCS043S UNEXPECTED TERMINATION OF *tttttttt* TASK, TCB=*aaaaaaaa*, CODE=*cccc*

Reason: Subtask ***tttttttt*** has terminated unexpectedly without the request to terminate. Its TCB address was ***aaaaaaaa*** and the completion code was ***cccc***.

System Action: Processing is terminated.

Action: Please check for any other messages which may indicate a problem that caused the subtask to terminate.

APCS044S ***tttttttt*** **TASK ABENDED, TCB=*aaaaaaaa*, CODE=*cccccccc***

Reason: Subtask ***tttttttt*** has terminated with a completion code of ***cccccccc***. Its TCB address was ***aaaaaaaa***.

Action: Please check for any other messages which may indicate a problem that caused the subtask to terminate.

APCS045U ***tttttttt*** **TASK TIMEOUT, TCB=*aaaaaaaa*, WAIT-ECB=*wwwwwwww*, POST-ECB=*pppppppp*,**
NO RESPONSE AFTER ATTACH
NO RESPONSE ON STOP REQUEST, TASK CANCELLED

Reason: Subtask ***tttttttt*** with TCB address ***aaaaaaaa*** did not respond after it was attached for a reasonable length of time (variant 1) or did not terminate after a reasonable time (variant 2). The values ***wwwwwwww*** and ***pppppppp*** show the contents of the wait-ECB and post-ECB used for task communication, respectively.

Action: Please check for any other messages which may indicate a problem that caused the subtask not to respond.

APCS046I ***tttttttt*** **TASK(*pppppppp*) *nnnnnnnn* TIMES ATTACHED, CPUTIME=*c.ccc***

Reason: The main task has attached the executor subtask ***tttttttt*** for processing *InTune* requests with module ***pppppppp nnnnnnnn*** times.

Action: None.

APCS048I MAIN TASK READY FOR WORK

Reason: The main task has initialized itself and is now ready for work. This message has the same meaning as message **APCS042I**.

Action: None.. However this message can be used in your automation process to indicate that the AQM-APC Server is now operational.

APCS050I AX RESERVED, VALUE=*xxxx*

Reason: Cross-memory setup in progress. An authorization index of ***xxxx*** has been obtained from the system.

Action: None.

APCS051I AX ACTIVATED

Reason: Cross-memory setup in progress. The obtained authorization index has been activated.

Action: None.

APCS052I LX RESERVED, VALUE=*xxxxxxxx*

Reason: Cross-memory setup in progress. A linkage index with value ***xxxxxxxx*** has been reserved for the AQM-APC Server.

Action: None.

APCS053I ETDEF SUCCESSFUL

Reason: Cross-Memory setup in progress. The Entry Table definition to the system was successful.

Action: None.

APCS054I ETCRE SUCCESSFUL, TOKEN=*xxxxxxxx*

Reason: Cross-memory setup in progress. The Entry Table creation was successful and the associated token is ***xxxxxxxx***.

Action: None.

APCS055I NAME/TOKEN CREATE, RC=*nnnnnnnn*

Reason: The create function of the Name/Token services ended with a return code of ***nnnnnnnn***.

Action: Normally none. However a non-zero return code indicates a problem.

APCS056I ADDRESS SPACE AX RESET

Reason: Cross-memory termination in progress. The authorization index has been reset.

Action: None.

APCS057I LX FREED, VALUE=*xxxxxxxx*, RC=*nnnnnnnn*

Reason: Cross-Memory termination in progress. The reserved linkage index ***xxxxxxxx*** for the AQM-APC Server has been freed. Function ended with return code ***nnnnnnnn***.

Action: None.

APCS058I ETDES SUCCESSFUL, TOKEN=*xxxxxxxx*

Reason: Cross-memory termination in progress. The Entry Table associated with token ***xxxxxxxx*** was successfully deleted.

Action: None.

APCS059I NAME/TOKEN DELETE, RC=*nnnnnnnn*

Reason: The delete function of the Name/Token services ended with return code ***nnnnnnnn***.

Action: Normally none. However, a non-zero return code indicates a problem.

APCS060I EXIT POINT *xxxxxxxx*,NMBR=*nnnn*,AM=*am*,KEY=*kk*,FLGS=*xx*

Reason: The AQM-APC Server has found exit-point ***xxxxxxxx*** with ***nnnn*** exit routines.

Action: None.

APCS061I EXIT ROUTINE *rrrrrrrr*,FLGS=*xx*

Reason: The AQM-APC Server has found exit routine ***rrrrrrr*** while scanning defined exit points.

Action: None.

APCS062I CSVDYNEX, *ffffffff*, EXIT= *xxxxxxxx*, MOD=*mmmmmmmm*, RC=*nnnnnnnn*, RSN=*rrrrrrrr*

Reason: The AQM-APC Server has called the Dynamic Exits Facility to execute function ***fffffff*** for exit-point ***xxxxxxxx*** and module ***mmmmmmmm***. Return code was ***nnnnnnnn*** and reason code was ***rrrrrrr***.

Action: Normally none. However, a non-zero return code indicates a problem.

APCS063I EXIT ROUTINE *rrrrrrrr* FOR EXIT POINT *xxxxxxxx* ALREADY INSTALLED, STATUS=*ssssssss*

Reason: While scanning the exit-points to install the AQM-APC Server owned exit-routines, the AQM-APC Server has found that routine ***rrrrrrr*** for exit-point ***xxxxxxxx*** is already there with status ***ssssssss***.

System Action: When the status of the exit routine is active it is first deactivated and then activated again to ensure proper initialization. When the status of the exit routine is inactive, it is simply activated again.

Action: Normally none. However, if it is desired that a fresh copy from disk of the exit routine should be installed, first stop the AQM-APC Server again, second delete the exit routines with the MVS 'SETPROG EXIT,DELETE,...' command, and finally activate the AQM-APC Server again.

APCS064S EMPTY EXIT-LIST RECEIVED FROM CSVDYNEX MACRO

Reason: The Dynamic Exits Facility returned an empty list of exit-points to the AQM-APC Server.

System Action: Processing terminates.

Action: There might be a problem within the Dynamic Exits Facility, or, the AQM-APC Server does not have the authority to obtain that information. Please check this.

APCS065S EXIT POINT *xxxxxxxx* NOT DEFINED IN SMF TO INSTALL EXIT ROUTINE *rrrrrrrr* FOR SUBSYS *ssss*

Reason: This message is issued when the AQM-APC Server is requested to monitor jobs running under a different subsystem ID (e.g., SERVER, APPC,...) than the primary subsystem ID and the SMFPRMxx member of the SYS1.PARMLIB does not define the required exit points for the additional subsystem ID's.

System Action: Processing terminates.

Action: Either delete the additional subsystem IDs to be monitored by the AQM-APC Server or modifiy your SMFPRMxx member of the SYS1.PARMLIB to include the required exit points for the AQM-APC Server.

APCS070I PRIMARY JES SUBSYS NAME IS *jjjj*

Reason: The AQM-APC Server found that the name of the primary JES subsystem is ***jjjj***.

Action: None.

APCS071I JES SUBSYS TYPE IS *jjjj*

Reason: The found JES subsystem type ***jjjj*** is either JES2 or JES3.

Action: None.

APCS072I SMF INTERVAL TIME FOR *jjjj* IS *mm* MIN *ss* SEC

Reason: SMF interval recording for JES subsystem with name ***jjjj*** is active with an interval time of ***mm*** minutes and ***ss*** seconds.

Action: None.

APCS073I SMF INTERVAL RECORDING IS NOT ACTIVE FOR *jjjj*

Reason: SMF interval recording is not active for JES with subsystem name ***jjjj***.

Action: None.

APCS074S SMF IS NOT ACTIVE OR HAS ENDED ABNORMALLY

Reason: While checking the SMF environment the AQM-APC Server received a return code indicating that SMF is not responding.

System Action: Processing terminates.

Action: Please check if SMF is active.

APCS075S SMF IS NOT RECORDING RECORD TYPE *tttt*

Reason: While checking the SMF environment the AQM-APC Server found that SMF is not recording the required record type ***tttt***.

System Action: Processing terminates.

Action: Please check your SMF definitions that the required record type is provided for the AQM-APC Server.

APCS076S SMF IS NOT RECORDING RECORD TYPE *tttt/s* FOR SUBSYS *jjjj*

Reason: While checking the SMF environment the AQM-APC Server found that SMF is not recording record type/subtype ***tttt/s*** for JES with subsystem name ***jjjj***.

System Action: Processing terminates.

Action: Please check your SMF environment that the required record type/subtype is generated for the subsystem.

APCS080I OPERATOR INTERFACE ESTABLISHED, COM=*cccccccc*, ECB=*aaaaaaaa*

Reason: The AQM-APC Server has established its interface to receive commands from a console.

Action: None.

APCS082I OPERCMD: STOP COMMAND RECEIVED

Reason: The AQM-APC Server has recognized a STOP command issued from a console. Termination processing will be started.

Action: None.

APCS083I OPERATOR INTERFACE TERMINATED

Reason: The AQM-APC Server has terminated its interface to receive commands from a console.

Action: None.

APCS090S UNABLE TO OPEN FILE WITH DD-NAME *dddddddd*

Reason: The AQM-APC Server is unable to open a file with DD-Name ***dddddddd***.

System Action: Processing terminates.

Action: Please check the job control for the required DD-statement.

APCS091S CLOSE FAILURE FOR DD-NAME *dddddddd*

Reason: The AQM-APC Server received a non-zero return code from a CLOSE macro for DD-name ***dddddddd***.

System Action: Processing terminates.

Action: Please check the job control for the DD-statement definitions.

APCS092S UNSUCCESSFUL VSAM READ OPERATION FOR FILEID=*xx*, RC=*nnnn*

Reason: A read operation failed for VSAM file with internal file ID ***xx*** and return code ***nnnn***.

System Action: Processing terminates.

Action: Please check for any other messages indicating an error on either the alert file, exclusion file, changed load module file, or job file for further problem determination.

APCS100I ABOUT TO LOAD AQM-APC PARAMETERS AND DEFAULTS

Reason: The initialization process has reached the point where it loads the parameters and defaults from the AQM-APC parameter file.

Action: None.

```
APCS101I  ALERT TABLE ALLOCATION SIZE..... nnKB
APCS101I  JES/SMF COMMUNICATION BUFFER LENGTH .....nnKB
APCS101I  RQA SUBPOOL LENGTH .....nnKB
APCS101I  INITIAL NUMBER OF RQA SUBPOOLS .....n
APCS101I  ALERT TABLE ALLOCATION SIZE .....nnKB
APCS101I  DD-NAME FOR MESSAGE LOG .....ddn
APCS101I  DD-NAME FOR AQM-APC PARAMETERS.....ddn
APCS101I  DD-NAME FOR TRACE LOG FILE .....ddn
APCS101I  DD-NAME FOR SDS MODEL JOB .....ddn
APCS101I  NAME OF MESSAGE LOG WRITER MODULE .....mod
APCS101I  NAME OF VSAM REQUEST DRIVER MODULE .....mod
APCS101I  NAME OF AUTHORIZED TASK STUB MODULE .....mod
APCS101I  NAME OF BSAM/QSAM SERVICE MODULE .....mod
APCS101I  NAME OF VSAM SERVICE MODULE .....mod
APCS101I  NAME OF TRACE LOG WRITER MODULE .....mod
APCS101I  NAME OF SDS JOB CREATE/SUBMIT MODULE .....mod
APCS101I  NAME OF INTUNE REQUEST CREATE MODULE .....mod
APCS101I  INTUNE SERVICE MODULE NAMES .....mod
APCS101I  NAME OF MODULE FOR EXIT IEFACTRT .....mod
APCS101I  NAME OF MODULE FOR EXIT IEFUJI .....mod
APCS101I  NAME OF MODULE FOR EXIT IEFUSI .....mod
APCS101I  NAME OF MODULE FOR EXIT IEFU83 .....mod
APCS101I  NAME OF MODULE FOR EXIT IEFU84 .....mod
APCS101I  DSN OF DYNAMIC USER-EXITS LIBRARY .....dsn
APCS101I  LIST OF ADDITIONAL SUBSYS ID'S .....id
APCS101I  SERVER INTERNAL CONTROL TIME INTERVAL .....nn SEC
APCS101I  ALERT REFRESH TIME INTERVAL .....nn MIN
APCS101I  SERVER RUNTIME INTERVAL  .....nn MIN
APCS101I  SERVER JOBSTEP ALLOCATION PHASE CHECK INTERVAL ....nn SEC
APCS101I  MAX. NUMBER OF INTUNE REQ. / SERVER RUNTIME INTERVAL .nnn
APCS101I  MAX. NUMBER OF RETRIES FOR FAILED INTUNE REQUESTS .n
APCS101I  DEFAULT GOMIN VALUE FOR MEASURMENT REQUESTS .....nn MIN
APCS101I  DSN PREFIX FOR INTUNE MEASUREMENTS .....dsn
```

```
APCS101I  DSN PREFIX FOR INTUNE NARROW MEASUREMENT DATASETS .....dsn
APCS101I  DEFAULT SAMPLES / ADDITIONAL PARMS FOR MEASUREMENTS..txt
APCS101I  MORE ADITIONAL PARMS FOR MEASUREMENTS ..............txt
APCS101I  VOLUME FOR INTUNE MEASUREMENTS .................vol
APCS101I  UNIT FOR INTUNE MEASUREMENTS ...................unit
APCS101I  INTRDR SYSOUT CLASS FOR SDS PROCESSING JOBS .......c
APCS101I  MESSAGE LEVEL FOR AQM-APC SERVER MESSAGE LOG ......n
APCS101I  ALERT TABLE SEARCH OPTION ..........................n
APCS101I  AUTHORIZATION PASSWORD - CENTRAL COMP ..............
           ppppppppppp, VALID FOR nnnnnnnnnn DAYS
APCS101I  AUTHORIZATION PASSWORD - AQM-APC SERVER.............
           ppppppppppp, VALID FOR nnnnnnnnnn DAYS
```

Reason: Message APCS101I shows the parameters and defaults found for processing.

Action: None.

APCS102S AUTHORIZATION PASSWORD NOT FOUND IN PARMS FILE FOR *ccccc*

Reason: An authorization password is required for component ***ccccc*** to run the AQM-APC Server successfully.

System Action: Processing terminates.

Action: Please check the parameters file for a valid authorization password.

APCS103S AUTHORIZATION PASSWORD VERIFICATION FAILED, CODE=*ccccc*, COMP.ID=*cc*

Reason: The specified authorization password for a component with ID ***cc*** is invalid or has expired.

System Action: Processing terminates.

Action: Please check the AQM-APC parameters file for a valid authorization password.

APCS104W DDNAME FOR SDS MODEL JCL NOT SPECIFIED IN PARMS MODULE
APCS104W DDNAME FOR SDS MODEL JCL NOT SPECIFIED IN SERVER JCL

Reason: The AQM-APC Server is unable to obtain a DD-name to read the model JCL statements for the sample data set processing job of measurements.

System Action: Processing continues.

Action: Please supply a valid DD-statement for the SDS model job.

APCS105I MODEL JCL FOR MEASUREMENT PROCESSING:

Reason: The specified model JCL for processing *InTune* sample data sets is logged after this message.

Action: None.

APCS110S APC SERVER JOB IS ALREADY IN THE SYSTEM, JOBNAME=*jjjjjjjj*, ASID=*xxxx*, ASCB=*aaaaaaaa*

Reason: A job with the same name as the AQM-APC Server is already in the system. There is only one AQM-APC Server allowed to run at a time on a MVS image.

System Action: Processing terminates.

Action: If the indicated job is really the AQM-APC Server, none. If the indicated job is not the AQM-APC Server, please rename the AQM-APC Server job to some other name before starting again.

APCS111S APC AQM-APC SERVER IS ALREADY IN THE SYSTEM WITH DIFFERENT JOBNAME

Reason: During initialization the AQM-APC Server has determined that some other job is doing the same function as the AQM-APC Server. However the job name could not be located.

System Action: Processing terminates.

Action: Please check your system to see if someone else has activated the AQM-APC Server under a different job name.

APCS112U MISSING APF AUTHORIZATION FOR THIS JOBSTEP

Reason: The AQM-APC Server needs APF authorization, but does not have it.

System Action: Processing tries to terminate orderly, but may abend.

Action: Please check your installation to ensure that the AQM-APC Server load library has the proper APF authorization.

APCS123I ALERT JOB=*jjjjjjjj*/*ssssssss*/*pppppppp*, PROGRAM=*mmmmmmmm*, AID=*nnnnn*, GOMIN=*ggg*, STAT=*ssss*, *action*

Reason: The AQM-APC Server has processed an alert request for job ***jjjjjjjj*** , step ***ssssssss*** , procstep ***pppppppp*** , and program ***mmmmmmmm*** with status ***ssss***.

Action: None.

APCS124I NUMBER OF *tttttttt* ENTRIES LOADED WAS *nnnnnnnn*

Reason: The AQM-APC Server has loaded ***nnnnnnnn*** entries for table ***tttttttt.***

Action: None.

APCS125I FREE *tttttttt* TABLE, ADDR=*aaaaaaaa*, LENGTH=*llll*(HEX)

Reason: Termination processing released virtual storage for table ***tttttttt*** at address ***aaaaaaaa*** with length ***llll***.

Action: None.

APCS126I NO RELEVANT INFORMATION FOUND ON VSAM FILES FOR PROCESSING

Reason: The AQM-APC Server did not find any relevant information for its processing.

Action: None. When the alert refresh interval expires, the AQM-APC Server will try again.

APCS130I MONITORING JOB *jjjjjjjj*, DATE=*ccyy.ddd*, TIME=*hh:mm:ss*, REASON=*rrrr*

Reason: The AQM-APC Server has recognized job ***jjjjjjjj*** to be relevant for monitoring.

Action: None.

APCS131I INTUNE "MEASUREMENT" REQUEST ISSUED FOR *jjjjjjjj/ssssssss/pppppppp*, ASID=*xxxx*, AID=*nnnnn*

Reason: The indicated job step is now active in the system and the AQM-APC Server has issued an "MEASURMENT" to *InTune.*

Action: None.

APCS132I *jjjjjjjj/aaaa strb-stmt*

Reason: This message shows the generated *InTune* control statements for job ***jjjjjjjj*** and ASID ***aaaa***.

Action: None.

APCS133I *jjjjjjjj*,ASID=*xxxx*, STEP *nnn* STARTED (*ssssssss*)

Reason: The JES/SMF user exit IEFUSI has notified the AQM-APC Server that job *jjjjjjjj* with ASID *xxxx* is now initiating step number ***nnn*** with name ***ssssssss***.

Action: None.

APCS134I *jjjjjjjj*,ASID=*xxxx*, STEP *nnn* ENDED (*ssssssss/pppppppp*), CC=*cccc*, CPU=*mm:ss.th*, ELAP=*mm:ss*, EXCP=*xxxxxx*, SERU=*nnnnn*K

Reason: The JES/SMF user exit IEFACTRT has notified the AQM-APC Server that step number ***nnn*** with step name ***ssssssss*** and procstep name ***pppppppp*** has ended for job ***jjjjjjjj*** and ASID ***xxxx***. The completion code for this step is ***cccc***, the used CPU time is ***mm:ss.th***, the elpased time is ***mm:ss***, the number of EXCPs is ***xxxxxx***, and the used service units in thousands is ***nnnnn***.

Action: None.

APCS135I *jjjjjjjj* TERMINATED

Reason: The JES/SMF user exit IEFACTRT has notified the AQM-APC Server that job ***jjjjjjjj*** has terminated.

Action: None.

APCS990U MISSING OR BAD PARAMETER-LIST PASSED, R1=*aaaaaaaa*

Reason: This message indicates an internal error of the AQM-APC Server.

System Action: Processing tries to terminate orderly, but might abend.

Action: Please check for any other messages indicating a problem.

APCS991U UNEXPECTED ERROR OR CONDITION ENCOUNTERED

Reason: A function or macro call passed back an unexpected return code indicating an error or an unusual condition. Along with this message the macro, function, or program are shown where the error occurred with the return / reason code and some diagnostic data.

System Action: Processing tries to terminate orderly, but might abend.

Action: Please check for any other messages indicating a problem. If the reason for the problem cannot be fixed it might be necessary to call the technical support for the AQM-APC Server.

APCS992T THIS COMPONENT HAS NOT BEEN ENABLED. PLEASE CONTACT YOUR AQM-APC SUPPORT REPRESENTATIVE

Reason: The AQM-APC Server must be enabled to run on your system under advice of the technical support for the AQM-APC Server.

System Action: Processing terminates.

Action: Please contact your product distributor to enable the AQM-APC Server on your system.

Appendix D. PTF Application or Product Extension

This appendix illustrates JCL members that might be needed to apply PTF maintenance or to extend AQM-APC product functionality. The load jobs, in particular, should not be executed unless told to do so by your AQM-APC technical support.

JCL for ZAPJAUTH - AQM-APC Server Authorized Load Modules

```
//JOBCARD…
//*******************************************************************
//* ZAP JOB FOR AQM-APC SERVER AUTHORIZED LOAD MODULES
//*******************************************************************
//ZAPLOAD  EXEC  PGM=IMASPZAP,PARM=IGNIDRFULL
//SYSLIB   DD    DISP=SHR,DSN=prefix.APC.AUTH
//SYSPRINT DD    SYSOUT=*
//SYSIN    DD    *
```

JCL for ZAPJLOAD - AQM-APC Unauthorized Load Modules

```
//JOBCARD…
//*******************************************************************
//* ZAP JOB FOR LOAD LIBRARY  (UNAUTHORIZED MODULES)
//*
//*******************************************************************
//*
//ZAPLOAD  EXEC  PGM=IMASPZAP,PARM=IGNIDRFULL
//SYSLIB   DD    DISP=SHR,DSN=prefix.APC.LOAD
//SYSPRINT DD    SYSOUT=*
//SYSIN    DD    *
```

JCL for LNKJLOAD - Linking AQM-APC Changes in the Load Library

```
//JOBCARD...
//*
//*
//*
//*********************************************************************
//* LINK JOB FOR AQM-APC CORRECTIONS IN THE LOAD LIBRARY
//*
//* ACTION: ENTER THE NAME OF THE CORRECTION MEMBER YOU HAVE SAVED
//*         IN THE INSTALLATION LIBRARY IN THE SYSLIN STATEMENT IN
//*         STEP LINKAL AND SUBMIT THE JOB.
//*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002                        *
//*********************************************************************
//*
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKNCAL EXEC PGM=IEWL,PARM='XREF,LIST,NCAL,REUS(REFR)'
//SYSLIB   DD   DISP=SHR,
//              DSN=NULLFILE
//SYSUT1   DD   DISP=(,DELETE),
//              SPACE=(CYL,(02,1),,CONTIG),
//              DCB=(OPTCD=C,BLKSIZE=1024),
//              UNIT=SYSDA
//SYSPRINT DD   SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD   DISP=SHR,
//              DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD   DISP=(,PASS),
//              DSN=&&LOADLIB,
//              UNIT=SYSDA,
//              DCB=(RECFM=U),
//              SPACE=(CYL,(1,1,50))
//SYSLIN DD DISP=SHR,
//          DSN=prefix.APC.INST.V43.LIB(INSTLNK1)
//*
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKAL   EXEC PGM=IEWL,PARM='XREF,LIST'
//SYSLIB   DD   DISP=SHR,
//              DSN=SYS1.LINKLIB
//         DD   DISP=OLD,
//              DSN=&&LOADLIB
//         DD   DISP=SHR,
//              DSN=prefix.APC.LOAD
//         DD   DISP=SHR,
//              DSN=
//         DD   DISP=SHR,
//              DSN=
//SYSUT1   DD   DISP=(,DELETE),
//              SPACE=(CYL,(02,1),,CONTIG),
//              DCB=(OPTCD=C,BLKSIZE=1024),
```

```
//              UNIT=SYSDA
//SYSPRINT DD   SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD   DISP=SHR,
//              DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD   DISP=SHR,
//              prefix.APC.LOAD
//**** ENTER THE NAME OF THE CORRECTION MEMBER HERE
//SYSLIN DD DISP=SHR,
//          DSN=prefix.APC.INST.V43.LIB(CORR####)
```

JCL for LNKJAUTH - Linking AQM-APC Server Changes in the Load Library

```
//JOBCARD...
//*
//*
//*
//*********************************************************************
//* LINK JOB FOR AQM-APC STC CORRECTIONS IN THE AUTHORIZED LOAD LIBRARY
//*
//* ACTION: ENTER THE NAME OF THE CORRECTION MEMBER YOU HAVE SAVED
//*         IN THE INSTALLATION LIBRARY IN THE SYSLIN STATEMENT IN
//*         STEP LINKAL AND SUBMIT THE JOB.
//*
//*     COPYRIGHT   A.P.M. AG   ZURICH  2002
//*********************************************************************
//*
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKNCAL EXEC PGM=IEWL,PARM='XREF,LIST,NCAL,REUS(REFR)'
//SYSLIB   DD   DISP=SHR,DSN=NULLFILE
//SYSUT1   DD   DISP=(,DELETE),
//              SPACE=(CYL,(02,1),,CONTIG),
//              DCB=(OPTCD=C,BLKSIZE=1024),
//              UNIT=SYSDA
//SYSPRINT DD   SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD   DISP=SHR,
//              DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD   DISP=(,PASS),
//              DSN=&&LOADLIB,
//              UNIT=SYSDA,
//              DCB=(RECFM=U),
//              SPACE=(CYL,(1,1,50))
//SYSLIN DD DISP=SHR,
//          DSN=prefix.APC.INST.V43.LIB(INSTLNK1)
//*
//*-------------------------------------------------------------------
//*        LINK-EDIT
//*-------------------------------------------------------------------
//LINKAL   EXEC PGM=IEWL,PARM='XREF,LIST'
//SYSLIB   DD   DISP=SHR,
//              DSN=SYS1.LINKLIB
//         DD   DISP=OLD,
//              DSN=&&LOADLIB
//         DD   DISP=SHR,
//              DSN=prefix.APC.LOAD
//         DD   DISP=SHR,
//              DSN=prefix.APC.AUTH
//         DD   DISP=SHR,
//              DSN=
//         DD   DISP=SHR,
//              DSN=
//SYSUT1   DD   DISP=(,DELETE),
//              SPACE=(CYL,(02,1),,CONTIG),
```

```
//              DCB=(OPTCD=C,BLKSIZE=1024),
//              UNIT=SYSDA
//SYSPRINT DD   SYSOUT=*,OUTLIM=20000
//INSTOBJ  DD   DISP=SHR,
//              DSN=prefix.APC.INST.V43.LIB
//SYSLMOD  DD   DISP=SHR,
//              DSN=prefix.APC.AUTH
//**** ENTER THE NAME OF THE CORRECTION MEMBER HERE
//SYSLIN DD DISP=SHR,
//          DSN=prefix.APC.INST.V43.LIB(CORR####)
```

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Name: _____ Title: _____

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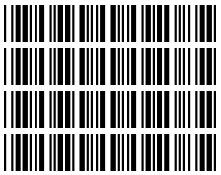
Please mail or fax this form to your AQM-APC product distributor.

Thank You!



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